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ABSTRACT

The focus is primarily on elementary and secondary education with implications for organized education at other levels. There are ten major topics of discussion: 1) the major social forces for stability and change that will effect planning; 2) the problem of educational change with emphasis on current analysis of change, educational history, and conflicts among goals and institutions; 3) the major components of the educational scene --learner, teacher, material, school, community, university, and government-- with comments on roles, problems, and change; 4) the nature of social science, interaction with, and contribution to elementary, secondary, and teacher education; 5) the learner, his needs, problems, and perscriptions for change; 6) the nature and roles of educational personnel; 7) the development, publication, and use of educational materials with analyses of the relationship of students, teachers, developers, and publishers; 8) the purposes, nature, and possible methods of analysis and evaluation; 9) the needs, modes, and possible methods of dissemination; and, 10) a selective summary of analyses and recommendations. (Author/SBE)

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A REVIEW OF THE

STATUS OF SOCIAL SCIENCE EDUCATION IN 1970

AND SUGGESTED NEEDS FOR THE COMING DECADE

A draft paper presented to
THE NATIONAL SCIENCE FOUNDATION
by members of the
SOCIAL SCIENCE EDUCATION CONSORTIUM, INC.
for discussions on
October 28, 1970

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FOREWORD

The following review is probably more comprehensive than is required for purposes of the planned discussion of the National Science Foundation staff members and members of the Social Science Education Consortium on October 28. This broad, if not exhaustive, review is intended to give some of our assumptions and perceptions which form the background for items that will be selected for discussion.

We suggest that the sections that are starred in the Table of Contents be put on the agenda for discussion. Additional items may be added by any participants, for either brief descriptive treatment or for in-depth discussion of the related facts, generalizations, and implications for the future.

The persons listed on the preceding page participated in lengthy discussions which led to the writing of this review but they have not had the opportunity to suggest qualifications and revisions.

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1.0 Introduction

1.1 Focus. Our concern here is with the contributions that social science can and should make in the 1970's to education and, through education, to a better society. We shall focus particularly on elementary and secondary education, although much of the analysis and many of the prescriptions have implications for organized education at all levels.

1.2 Preview. We deal first, and very briefly, with the major social forces for stability and change that need to be reckoned with in planning social science education for the 1970's (2.0). Then we consider the general problem of educational change, with particular emphasis on current analyses of change, the importance of learning from the past, and conflicts among goals and among institutions (3.0). A general overview of the major components of the educational scene--learner, teacher, materials, school, community, university, and government--is then presented, with comments on their current roles and problems and on probable and/or desirable changes in the nature and roles of these components in the near future. (4.0). The nature of social science is then considered, including its current and potential interactions with and contributions to elementary and secondary education and the education of teachers (5.0).

Next we consider in more detail the learner, his needs and problems in typical contemporary school situations, and some of the prescriptions for change that seem to be most urgent from his viewpoint (6.0). The nature and roles of educational personnel, present and future, are then considered; educational personnel is here considered as a very broad category--including teachers at all levels from elementary through graduate school, administrative and resource persons, and laymen who do or might participate in the educational process (7.0). The development, publication, and use of educational materials

to meet the needs of the future are discussed next, with analyses of the relationship of students, teachers, developers, and publishers to educational materials (8.0).

Analysis and evaluation are taken up next, with emphasis on the necessity for taking a very broad view of the purposes, nature, and possible methods of analysis and evaluation and with brief mention of a number of promising new ideas (9.0). Then the needs, modes, and possible methods of dissemination are considered briefly (10.0). Finally, a selective summary of the preceding analysis and recommendations is presented (11.0).

2.0 Stability and Change: Basic Assumptions and Forces

2.1 Stable Forces. In the midst of present turmoil and possible future changes, we assume at least a few elements of stability in American education in the coming decade or two. These include continued general acceptance of:

--the need for a planned and organized system or systems of education;

--the desirability of education for everyone up to a certain level; and

--substantial public financial support of education.

2.2 Forces for Change. Some of the major social forces causing changes now or likely to cause changes in the near future are the following.

2.21 Social dissatisfaction and unrest.

2.211 There is widespread alienation of youth, both from the educational system and from society at large. Even if there is some exaggeration (and we do not say there is) in the descriptions, implications, or conclusions of writers such as Paul Goodman, Edgar Friedenberg, John Holt, Herbert Kohl, and George Leonard, there can be little doubt that the current apathy, questioning, resistance, violence, and revolt of many young people is unprecedented and serious.

2.212 Protests of black, brown, red, poor, and other minorities are another important element, of unprecedented force at the present time, in the broad picture of social dissatisfaction. Most of these protests are directed at discriminatory practices. With respect to education, they may soon turn from sensitivity about discrimination to sensitivity about the poor quality of education, which is the focus of non-minority protest.

2.213 On top of the dissatisfaction with society and education on the part of youth and of minorities, there is general public discontent with our present social condition, much of it directed toward the schools. There is some sympathy on the part of older persons with the disenchantment of youth,

and still more concern about the disrupting effects of that disenchantment. There is growing resistance to spending more money on schools and growing suspicion about the efficiency and efficacy of the schools.

2.22 Changes in occupational patterns. There has always been doubt and debate about the effectiveness of our schools in preparing young people for vocational roles. Added to the problem of how best to prepare students for today's occupational roles is the problem of how to prepare them for possibly unpredictable vocational roles some decades in the future. The change from jobs oriented to production of things to jobs oriented to production of services goes rapidly on and will continue for some time in the future--a broad trend superimposed on the ever-changing job mix attributable to technical and organizational changes, shifts in demand for specific goods and services, and changes in natural and man-made resources.

2.23 Decreasing population growth rate. The recent sharp drop in population growth rate in many parts of the world, including the United States, will probably continue at least for a short time and may well be a long-term change. The change may or may not be large enough to allay current alarm over man-resource ratios. It has already had other effects, which are likely to continue into the near future at least. A lower population growth rate usually causes a slower rate of economic growth, which in turn makes economic adjustments--recovery from economic recession and adjustments of the work force to new job pattern, for example--more difficult.

A very direct effect of a lower population growth rate is, of course, a lower rate of growth in the school population. While high rates of growth for school populations cause problems, low--and particularly lowered--rates also cause problems, especially problems of adjusting to changing educational demands and technology.

A notable direct result of the changed rate of population growth is the sudden appearance of a surplus of teachers--many of whom started their training at a time when teachers were in large demand and without knowledge of the coming surplus. The surplus is hard on unemployed teachers, but may provide an opportunity for changes and improvements in quality of employed teachers and in the ways in which teachers are used.

2.24 Technological backwardness of education. Some people feel that education has always, up to the present, been backward in its technology and methods. While there have been many innovations suggested and tried during the twentieth century, and before, none of them have caught and spread with the force and effect of the steam engine, railroad, cotton gin, textile machinery, factory system, corporation system, automobiles, airplanes, or atomic energy. One can never say for sure that certain kinds of great inventions are possible in the future, since inventions are largely unpredictable. But there is always a hope, in our modern age of science and progress, that professions such as barbering, managing a medical doctor's office, and education, which have had no notable technological or organizational advances for long periods of time, might some day come up with some effective new ideas.

Efforts to innovate in education are many, but thus far the results have not been striking. Organizational innovations such as team teaching and modular scheduling have not come to much, perhaps because of the inflexibility of the larger system in which they are imbedded. Technological changes such as teaching machines and computer-assisted instruction have had little effect, and the many mergers of technologically-adept manufacturers with educational publishing firms have this far yielded little.

The absence of spectacular changes should not be taken to mean that nothing has happened to improve education. Much is accomplished in many

fields of endeavor through small changes made by many people--as we are told in the Volkswagen advertisements. But generalizations still seem warranted about the relative backwardness of some parts of society--such as railroads in the twentieth century, the U.S. Post Office, and education.

2.25 Foundation and government grants for educational purposes have typically been made with the hope of inducing changes rather than to support ongoing operations. This source of innovation may have as great a potential as any, but thus far has yielded only moderate results. Surveys have shown that the billions of dollars devoted to the purposes of Title I of the Elementary and Secondary Education Act produced negligible results. Teacher-education efforts of the U. S. Office of Education and the National Science Foundation have to a very large extent supported traditional patterns. Curriculum materials projects have probably brought a somewhat higher rate of change per dollar. The Office of Education's regional laboratories have some hopeful projects in process. "Sesame Street," funded jointly by Carnegie, Ford, and the Federal government, has attracted wide interest. The total impact is, thus far, small.

2.3 Probable Changes. Some of the major institutional changes which may take place in education in the next decade, and which offer opportunities for a hopeful setting for creative change, are the following.

2.31 The typical roles of students, teachers, administrators, and support personnel may change substantially in response to current dissatisfaction and pressures. Some of the possible modes of change are considered below in detail.

2.32 Related to the last point are changes in the physical structure of schools, away from the typical egg-crate structure which declares loudly that the normal form of education is one teacher and 30 students in a 30 x 30-foot room.

2.33 Related to both of the last two points are changes in the typical curriculum pattern, away from the traditional organization of subject matter in 30- to 50-minute blocks dominated by texts and teacher-led discussions.

2.34 A less likely, but possible, result of the current dissatisfaction with public schools is a shift away from the dominance of publicly-run elementary and secondary schools to publicly-supported but privately-run institutions. The barrier to such a change is strong, supported primarily by a tenacious American version of separation of church and state; but there are a few cracks in the barrier and the pressure for change is strong.

3.0 Educational Change and the Pedagogical Pendulum

3.1 "Change." This is a currently popular subject of discussion and research in education, dealing with such concepts--some of them newly-discovered or newly-coined--as "change agents," "resistance to change," and "stages in change." Such investigations have followed after, and are a part of, a larger and longer-standing sociological effort to study "change in organizations." Such research may offer some hope of help in reducing resistance to change and propagating some of the more creative and hopeful innovations in American education.

3.2 Sources of Resistance to Change. Social progress, including educational progress, ideally reflects an optimum balance between forces of conservatism and forces of change. "Resistance to change" is not necessarily bad; but excessive amounts of it are, and excessive amounts characterize our educational establishment.

3.21 In the elementary and secondary school establishment, there are a number of forces at work which inhibit change. Teacher's organizations, both NEA and AFL related, are a moderate to strong force for conservatism, tending to put salary levels, low pupil-teacher ratios, and tenure far ahead of all but the most trivial experimental efforts to improve education. Community pressures and tight budgets often militate against experimentation and "frills." Administrators of school systems usually find it safer to follow, or stand still, than to lead.

3.22 In the colleges and universities, the forces that militate against educational improvement are of a different nature. The divorce of educationists from academicians which took place early in the century, sought by the educationists as an expression of autonomy and professionalism, placed them in an inferior status position which they still occupy. This position has harme

the quality of their work by cutting off university-wide interactions, creating a defensive posture, and making it difficult to attract able personnel. The academicians have fostered and preserved an elitism which has set them apart from the educationists, deprived the educationists of needed help, and excused the academicians from concern about teaching--to the detriment of teaching at all levels. Professional social science associations and, to a lesser extent, college and university administrations, have reinforced the elitist attitude and aloofness from concern with teaching.

For whatever reasons, possibly including the separatism between education and the arts and sciences, the universities have failed to generate great new ideas in education. Notable acheivements have been posted in the twentieth century in the arts, the natural sciences, and the social sciences. Where are the great new ideas about education, which many people assume is the main business of the universities?

3.3 Strategies for Change. Studies of organizational and educational change have thrown some light on how change can be brought about. Emergent theories have not yet been put into general use. Pieces of implicit theories of change can be identified in many change efforts.

3.31 Key entry points. Who are the key persons, or which are the key processes or situations, in effecting educational change? Good arguments can be and have been made for many targets--preservice education, inservice education, classroom teachers, methods teachers, consultants, administrators, board members, classrooms, schools, school districts, and state departments of education. Not all of these can be "key" entry points, although it can be argued that all must be changed together--which amounts to a refutation of the theory of key entry points.

3.32 Feasible entry points. On the argument that it is hard to crack the system at any point, many programs for change have been aimed at the easiest entry points, though often in the guise of choosing key points. The popularity of summer training programs for experienced teachers can best be explained by this theory. Encouraged by salary credits and/or academic credits and/or stipends, teachers by the hundreds and thousands have been taughts in summer programs by thousands of professors in need of summer employment. The evidence of change behavior, improved teaching, or improvements in school systems resulting from summer institutes is discouraging.

3.33 Reinforcement. To an increasing extent, programs intended to change educational personnel have been planned to give reinforcement of various kinds. Training of teams from school districts rather than of isolated individuals is one such method. Training teams of teachers seems promising; training teams of personnel with different responsibilities--such as teachers, consultants, and administrators--seems still more promising, although harder to accomplish. Follow-up conferences, up to a year after the original training experience, are another method of reinforcement; follow-up visits from training personnel are another, and rarer, method. There is a little evidence of the efficacy of such reinforcement methods; theories of learning and of social interaction would support them.

3.34 Affecting major sources of influence. It was said above that teacher's organizations, as a rule, form a major barrier to change. In a few states and school districts, change efforts have been focused on these organizations, in the hope of moving a large body a little distance rather than accomplishing large but short-lived changes in the behavior of individuals.

3.35 Examples. Many efforts for educational change rely on the hope that good examples will bring about changes beyond the exemplars. There is some

evidence that both teachers and principals are averse to copying from the teacher in the next room or the school across town. Even if there were no reluctance to follow examples, efforts for improvement would be severely hampered by the shocking lack of documentation on the successes and failures of most educational innovations, particularly those that do not take on the characteristics of fads.

Fads are exemplars that do catch on, often under the incentive of being first and well-known rather than of sound educational improvement. A fad may be defined as a new idea or practice that catches on quickly, is inadequately understood by many adopters, may be accepted for the wrong reasons, and is dropped again before it is fully and judiciously tested. Faddism may be useful because it is a way of overcoming excessive conservatism and getting new ideas tried out; it shows that change is possible. Fads are wasteful in that they often result in hasty and shallow acceptance and premature abandonment; but they often leave a residue of interesting ideas and better-than-average documentation. Recent examples of innovations that have faddish aspects are many, including teaching machines, programmed learning, modular scheduling, and team teaching.

3.4 The Pedagogical Pendulum. A notable feature of much of the educational thought and turmoil of the last decade is its lack of historical perspective. Educational history does not repeat itself, but it does offer many new, interesting parallels.

New ideas and emphases are frequently reactions against old ideas and emphases. A careful study of the history of educational thought would reveal that educational thinking, both lay and professional, sometimes swings like a pendulum between two extremes. A notable example is the popularity of Deweyism and progressivism in the 1920's and 1930's, reacting against the

stern academic discipline of earlier decades; followed by the swing away from the "softness" of progressive education toward more structured education in the 1950's and 1960's; and now the reaction against academic emphasis and toward the freedom and autonomy which have important but generally unrecognized parallels with the theories of Dewey and the practice of progressivism.

A number of the persisting dichotomized debates about change that have occupied educators in recent years are described briefly below. In most of these cases, a historical swing or two of the pendulum could be identified; and fads or faddish aspects have accompanied many of the swings.

3.41 Knowledge vs. Application. This is one of the oldest debates. Should knowledge be acquired "for its own sake" or for its demonstrable usefulness for getting along in the world? In the current fuzzy debate about "relevance," it appears that the cognitive content of learning should be greatly reduced and that the content that remains must be seen by the learner as directly applicable to social or personal problems that are of concern to him.

3.42 Professional and vocational education vs. citizenship education. Another dichotomy, this one particularly pertinent to the social studies, contrasts learning that is vocationally useful to the individual with learning that makes for "good citizenship." This confrontation goes back at least two or three centuries in our own country. In its earlier forms it was the vocational education of ministers, teachers, and tradesmen vs. the education of "gentlemen." In its more recent versions, it is vocational education vs. the education of persons who can participate intelligently in a democratic society.

3.43 Professional control vs. citizen control of education. This too is an old dispute, but not a critical one until recently. Citizen or lay control of education, whether private or public, has been firmly established

in principle through most of U.S. history; disputes, when they have occurred, have centered on "excessive" influence of educators in practice, rather than on the principle of lay control. Recent disputes have been concerned with decentralization in large school systems, in which localized citizen control has contended for power with the "downtown" organization, which is seen as a combination of too-powerful professional administrators with a too-powerful lay central board.

Another aspect of the dispute over control is the question of who is qualified to teach. There have been strong pressures to hire more blacks and Hispanos at all educational levels, particularly but not exclusively to teach students of their own ethnic groups. Certification standards have bent under the pressures.

3.44 Content vs. method. This is a dichotomy of long standing, representing primarily the division between academicians and educationists. Academicians have generally taken the stand that academic content is what is important for teachers and elementary and secondary students to know. The teaching of methods has generally been dismissed as an unimportant matter that could be taken care of by the educationists, or as a fruitless endeavor, either because "teachers are born, not made," or because there is really nothing to learn about teaching except to learn the content of what is to be taught.

3.45 Content vs. process. This dichotomy cuts across the academician-educationist line. It is concerned with how much emphasis there should be on teaching existing facts, generalizations, and theories, as opposed to teaching how facts, generalizations, and theories are discovered and tested. In the 1960's there has been much support for an emphasis on process rather than content, as a method of handling the "knowledge explosion"; students who

learn how to "inquire" or "learn how to learn" will presumably be able to handle future demands on their educational capital than those having learned a lot of facts or content. An earlier, distant, parallel dispute took place early in the century, when classical education, having become less and less functional, was supported for its utility in creating a "disciplined" mind.

3.46 Cognitive vs. affective. A major element in Deweyism and progressive education in the 1920's and 1930's was a consideration for "the whole child," which meant in the more extreme forms of progressivism--a corruption of Dewey--an almost exclusive emphasis on the feelings, autonomy, and self-direction of the child; structured cognitive learning came into the curriculum only when and if the child expressed a need for it, which was unlikely to occur. A similar phenomenon is now occurring in American education, with writers like John Holt, Edgar Friedenberg, and Herbert Kohl presenting a vivid picture of how the schools are pushing children through callous neglect of their feelings and their need for self-expression and autonomy. In each of these cases, much of the force of criticism is directed against the prevailing emphasis on highly-structured cognitive learning which is seen as antithetical to concern for the views and feelings of students. The current enthusiasm for imitating in some American elementary schools the informal infant schools of England rests in part on the valid view that the English schools have found ways to give great latitude for self-expression and autonomous learning on the part of young children; the enthusiasm also rests in part on the incorrect view that the English schools have completely rejected the role of the teacher as an educational leader concerned with substantive learning. What has, in fact, happened in the best of the informal infant schools of England is a happy discovery of balance between structure and freedom, between the cognitive and the affective. (There are few, if any,

examples of a similar happy balance in secondary schools either in America or England.)

3.47 "Schooling" vs. education in the total community. The argument that education is a process that keeps learners separated from the "real world" and can do little to prepare them for the real world has taken many forms. When an eighth - grade education was the exception rather than the rule, the argument often was heard that the "school of hard knocks" was just as good as formal schooling. When formal schooling became well established, a number of efforts were made to temper esoteric formal education with practical work programs, primarily in work-study programs. The latest manifestations of the effort to get schools more engaged with the community is the "school without walls," a school that "uses the community as a classroom." Philadelphia's Parkway School is the outstanding example.

3.48 Curriculum materials vs. teacher education. The typical American classroom is dominated by a textbook. The content of the textbook, its linear method of presentation, and its suggested topics and discussion questions are the main bill of fare for most students in most classes--supplemented to a small extent by other reading materials, viaual aids, and materials or activities prepared by the teacher. This is the fact; the myth is that the typical teacher is a free and creative person who constructs and controls the curriculum.

An outstanding characteristic of many of the new curriculum materials produced by funded projects is the variety and richness of materials and activities. Such materials challenge at once the actual dominance of the textbook and the mythical position of the teacher as curriculum-creator. The new materials have sometimes been heralded--more often by their critics than their developers--as efforts to create "teacher proof" materials. In

addition to challenging the teacher as curriculum-creator, the new materials also challenge a second myth--one which says that there is nothing wrong with education that better preparation of teachers, higher salaries, more released time, and smaller classes cannot cure. This donfrontation is new in our educational history. While the new curriculum materials produced during the last decade have not yet proved that a great new force has arrived on the scene--and most of the social studies materials are just now seeing the light of day--they have posed a question for funding agencies as to how support should be divided between the preparation of materials and the preparation of teachers. At the present, support for curriculum materials production is waning, while teacher education is holding its own.

3.5 Goals in Conflict. The confrontations just described include as their elements a mixture of goals and of ways of achieving these goals. It may be useful to separate out and list the goals which have had various degrees of popularity at various times.

3.51 Knowledge for knowledge's sake has been a popular goal of the elite at least since the days of Pericles. It is suffering a partial exlipse at present.

3.52 Professional and vocational training also represent an educational goal of long standing. This kind of training is supported both for the sake of individual learners and of the society that needs their services. It is a component, perhaps a minor one, in the current cry for "relevance."

3.53 The disciplined individual is an educational goal that received a big play around the turn of the century, declined irregularly but steadily up to the late 1960's, and is now completely out of style.

3.54 "The flowering individual" is a phrase that can be used to describe a goal that emphasizes development of individuality and creativity. This was an important goal of Deweyism and progressivism, as it is of the English informal infant schools and their American counterparts. Reference to it can be discerned, sometimes but dimly, in the current criticisms of the schools by blacks and hippies.

3.55 The intelligent citizen has been a prominent and hardy goal of educators at least since the concepts of social studies, civic education, and problems of democracy were popularized by the NEA's 1916 Commission on Reorganization of Secondary Education. Somewhat modified to accomodate recent and current interests in civil liberties and the rights of minorities, it maintains an important place among curriculum goals.

3.56 "The socialized citizen" is a slightly modified version of the intelligent citizen. This goals stresses social responsibility and tolerance rather than social criticism and creativity. It may include tractability and partiotism. Current versions include picking up beer cans and driving bicycles rather than cars.

4.0 Problems and Change in Roles and Functions: Learner, Teacher, Materials, Schools, Community, University, and Government

In this section most of the major components of education will be analyzed briefly with respect to current problems, trends, and needs. In following sections some of these components--the learner, materials, the teacher, and the university--will be analyzed in more detail.

4.1 Learner. Many changes should and probably will, eventually, take place in the roles of the student.

4.11 The learning role can and should change. The learner will take a more active and participative role in his own education--in decision-making, in learning, and in learning how to learn. His learning will be related more closely to the community and the world, and some of his learning will take place in the community.

4.12 Diagnoses of where the learner is and where he should go next will be made much more frequently and more efficiently than at present, with the learner taking an active role in the diagnoses.

4.13 Individual placement in the learning process and sequencing of needed learning experiences will be more common and efficient than at present again with the learner participating in making the judgments and decisions.

4.14 The variety of resources and activities open to the learner will increase greatly. Available learning opportunities, each related to goals that the student can understand, will be multiplied. Human resources will be much more varied--including peer groups, older students, and adults--and available on a more varied and selective basis than at present.

4.15 Learning to use resources in a selective, purposive, and flexible manner will become a major goal of the learner.

4.2 Teacher. Changes in the roles and experiences of the teacher will possibly be as great as the changes that will affect students.

4.21 The teaching role will change markedly. The teacher will move out of his front-and-center position in the classroom. He will become a resource, a manager and expediter of a variety of learning situations, and a facilitator of the student's access to many other resources, including adults, a variety of learning materials, and a variety of resources and experiences in the community.

4.22 Differentiated staffing will probably increase. Schools will have more kinds of learning leaders and facilitators, who have both less and greater training and expertise than teachers now have. Older children, teachers in training, parents, paid and unpaid aides, and experts of various kinds will supplement and to some extent replace the present all-purpose teacher.

4.23 Preservice education may change more slowly than other parts of the system, but it must change to meet the newly-defined needs and roles of learners and schools. The teacher in training will get a greater variety of experiences, including more and earlier engagement with the schools, work in the community, and exposure to wide varieties of teacher roles.

4.24 Inservice education will become much more than an occasional workshop and occasional visit by a consultant. A greater variety of human and material resources will be made available to teachers. Documentation and analysis of new methods and experiences will be encouraged and will form the basis for mutual learning among school personnel.

4.3 Materials. Learning materials and equipment can, should, and eventually will play a much larger and more varied role in education. The funds spent on materials and equipment are out of line with money spent on buildings and personnel and will certainly increase.

4.31 The variety of materials with respect to format and conception will increase. Printed materials will vary from cheap throwaways to texts and encyclopedias, and will be used as references and activity guides as well as for informative reading. Computer facilities for information retrieval, problem-solving, and programmed learning will vary from classroom keysort cards and simple analogue computers to on-line connections with up-to-date computers. Television will be used in a variety of ways--open-circuit for public information and entertainment, closed-circuit for scheduled presentations within the school system, and cassettes for flexible use by individuals and small groups. Educational games, simulations, and articfacts will be abundant. Elementary schools will have a variety of unstructured materials and equipment--batteries, bulbs, wire, beads, cardboard, plywood, saws, hammers, etc.--for exploratory learning. Secondary schools will also have rich materials for exploratory learning, when and if good secondary analogues for Montessori and informal infant schools are invented: punched and unpunched computer cards? make-your-own simulations? teach your own peers?

4.32 Knowledge, content, and stucture can easily be lost in a panoply of gadgets and an excess of do-it-yourself enthusiasm. In an effort to go multi-media, publishers have already produced many filmstrips, transparencies, resource files, and games in which the technology of the product outstrips the utility and soundness of the content. As in the production of the best curriculum materials in the last decade, qualified academicians must be an integral part of the process of constructing the newer, more varied, forms of materials.

4.33 Student-materials interaction will become richer, more important, and more effective, provided the materials help to meet the student needs described above--the needs for participation, decision-making, diagnosis,

proper placement, sequencing, a balance between guidance and freedom, etc.

4.34 Teacher-materials interaction can also become richer and more effective, provided the ghost of "teacher-proof materials" can be laid to rest. Good materials and equipment can help to release the teacher from the impossible task of step-by-step guidance throughout the day of a large, or even a small, group of individuals. The teacher's time should be divided between making resources available to learners, helping them use the resources, serving as a resource himself, and diagnosing and meeting the needs of individuals and groups that cannot be met by other resources.

4.35 Materials and the environment. Educational materials and equipment are, to a large extent, a substitute for unstructured experiences as a means of learning. They can also be a guide to, and aid in the exploration of, the environment and direct experience as a part of structured educational experiences. The possibilities of using learning resources outside the schools have barely been touched; field trips, rare in most schools and circumscribed by excessive administrative caution and deficient imagination, are still the most common way in which nonschool resources have been used. Materials can become useful guides to preparing for, executing, and debriefing uses of nonschool resources.

4.4 School. A decade ago there was a surge of interest in reforming education through revolutionizing the physical stucture of school buildings. Most of the ideas proposed by J. Lloyd Trump and the Educational Facilities Laboratories were probably sound, but the supporting cast of characters, who would design and implement the activities that would take place within the buildings, was missing. Schools of the future must be different in form as well as function.

4.41 Flexible space and grouping. Flexibility is the key need in planning physical facilities. A great breakthrough for flexibility within the classroom occurred some time ago when chairs were unbolted from the floor--although there are still some bolted chairs, and many more that are treated as if they were bolted down. A minor breakthrough occurred when it was discovered that properly planned space could be used interchangeably for a gymnasium, auditorium, and a cafeteria. We may now be ready to carry on with physical changes suggested by Trump and now being incorporated in many new schools--open space, pods, flexible walls, and carrels--supplementing them with the necessary complementary changes in equipment, curriculum, curriculum resources, personnel roles, and so forth.

4.42 Curriculum resources in the form of materials, equipment, and persons will be more varied, more creative, and more available. A few school districts have excellent central resource centers with capable consultants, and a few schools are being built with a large resource center at their core. But most schools can offer their teachers little more than a mediocre library containing only books (which we do not intend to denigrate) and a few non-controversial periodicals, a noisy film projector which can be borrowed from the janitor's closet, and an overhead projector which was last seen on the third floor.

4.43 Differentiated staffing, as already indicated in the discussion of teachers, will play an important role in the schools of the future. This will require cooperation and creativity on the part of all parties. Administrators will have to learn more about delegation of responsibility and authority and about new forms of management as well. Teachers and their organizations will have to be willing to fit individuals to the jobs which suit them best and to accept salary schedules that are more attuned to the

skills and responsibilities of individuals. Teacher-education institutions will have to train professionals to fit a wider variety of jobs. The end result, when and if it is brought about, will be one that matches tasks to the skills and training of individuals, which brings greater job satisfaction for more people, and which will be much more efficient than the present system of fitting every round teacher into a square classroom.

4.44 Community personnel use has also been mentioned above. In addition to making more use of prospective teachers, the schools of the future will use a great many kinds of aides, including young people, old people, and parents, as well as businessmen, plumbers, and musicians who come in on a short-time basis as resource personnel.

4.45 Ungraded continuous-progress curricula will become more important in the future. The individualization of learning and learning progress requires this; and conversely, the success of ungraded classes depends upon the development of individualized learning programs. Many pieces will have to be fitted together to accomplish these goals: individualized programs; appropriate tests for placement and evaluation of progress; differentiated personnel who are freed from the routine of 50-minute performances and available for work with individuals and small groups; and methods of grading that do not depend primarily on IQ's, the number of class hours endured, and comparisons with other students.

4.46 Grades and other forms of measuring the status and progress of learning should perform a number of functions--feedback to the teacher on his performance, feedback to the student on his performance, benchmarks for diagnosing student needs, certification of levels of ability and progress to internal agents such as registrars, and certification of levels of learning and progress to outside agents such as parents and prospective employers.

Grades have been notoriously deficient in performing most of these functions. Methods of grading and evaluating will have to become much more flexible, functional, and individual.

4.5 Community. It is likely that there will be more community participation in and interaction with the schools in the coming decade. On the one hand, public dissatisfaction with the schools, particularly on the part of minority groups, gives the public an increased incentive for taking an interest in the schools. On the other hand, the schools are discovering that there are resources in the community that can enrich and improve education. Some of the new and changed roles of the community are the following.

4.51 The community can serve as a site for educational activity far beyond the field trips and work-study programs of the past. The Parkway School in Philadelphia is a prototype for this expanded activity.

4.52 The community can serve as a source of advisory and planning personnel. Businessmen, professors, parents, volunteer agencies, minority groups, and others can be brought into the helping role. The schools should do well to search out their most severe critics and give them advisory roles.

4.53 The community can be a source of participatory personnel. Some of the groups that serve in advisory and planning capacities may also devote some time to operational activities. A community can be a source of a great variety of resource persons used on a short-term basis, as well as the source for various types of aides used on a more frequent and regular basis.

4.54 The community can be a source of contract services. Typically, schools have bought their buildings, equipment, supplies, and much of their education materials from private firms; they have operated all of the educational activities themselves. Now, in a few places, parts of the educational operations are being contracted out to private firms on a performance-contract

basis. This is being done mostly with federal grants and in the areas of learning that are most easily evaluated--namely, mathematics and reading at the elementary levels. It is possible that the use of performance-contract services will grow substantially or that they will serve as an irritant to help the schools improve and to find better methods of evaluating needs and progress of students.

4.6 University. The desirable and probably future roles of the university in education are treated in detail below. Here we mention a few of the major considerations.

4.61 The education of educators must become a much more serious enterprise for the entire university. Serious thought must be given to the role of all university teachers as models of teaching, as teachers of future elementary and secondary teachers, and as teachers of future college professors.

4.62 Research and research institutions in universities have done notoriously little for the improvement of education. Even those research activities focused on education--typically in the schools of education--have been much more concerned with theory than with practice, emulating researchers in other parts of the university. There are many areas of potentially interesting and useful research related to the schools that are now almost untouched; this will be explored further in section 7.0 below.

4.63 Consulting and services to schools by many departments in the universities, as well as by the schools of education, could usefully be expanded. The possible contributions of economics, anthropology, psychology, sociology, and political science to the understanding and operation of the schools has hardly been considered.

4.7 Government. Many changes in the relationships of schools to various levels of government will probably occur in the next decade.

4.71 School districts typically are semi-autonomous units with the right to levy taxes on real property within the school district. Supplementing local school budgets with state funds has been common for many decades and, in some school districts, state support amounts to a large proportion of the local school budget. Federal support to local school districts is relatively new; it has been for special programs rather than general support, because of heavy political opposition to general federal support of education. The local property tax has been an unsatisfactory basis for local school support for a number of reasons and has become less and less satisfactory as the expenditures for schools have grown, relative to national income. It is difficult to argue that local taxes for schools are closely related either to those who benefit most from the schools or to those most able to pay. Local property taxes have been a constant source of friction between the community and the schools because of the feeling, at least partially justified, that this is not the proper way to support schools. Support for school bonds and levies has declined greatly. While there may not be a substantial decrease in the amount of property taxes going to the support of the schools in the near future, there will certainly be an increase in support from other sources--from local sales taxes, the state, and the federal government.

With the rapid growth of cities in recent decades, many urban school districts have become gigantic and have suffered the problems of excessive size, as well as sharing the many woes of big cities--urban blight, concentration of increasingly militant minority groups, and loss of taxation sources to the suburbs. On the other hand, school districts which cover small towns and rural areas have suffered from being too little. Many have been too small to support the minimum efficient size for school buildings and for instructional and administrative personnel. Consolidation of schools and

school districts has gone on at a fairly rapid pace during the last decade or two. From 1960 to 1970 the number of school districts decreased from 40,000 to less than 20,000. In the process of consolidation, the county superintendent of schools has virtually disappeared. But problems of smallness still plague many districts.

4.72 Intermediate districts have been established in some states. These are typically cooperative efforts of a number of small school districts for special purposes, leaving the individual districts autonomous in other respects. Special purposes served by intermediate school districts include the development of curriculum materials and inservice training of teachers and other school personnel. Some intermediate districts have a very limited local tax base. Some receive support from their state government. Most of them receive the bulk of their support from federal grants. It seems likely that intermediate districts will grow in number and in importance.

4.73 State departments of education have usually been concerned with supervisory functions such as certification of teachers and specification of minimum curriculum requirements. Apart from such supervision by state departments of education, local districts have retained a great amount of autonomy. However, the influence of state departments of education has increased through their role in allocating an increasing proportion of funds to local districts and through the services of various kinds which they render to local districts. The amount of general state support given to local districts has steadily increased. Also the influence of states in the allocation of federal funds has increased, particularly since 1958.

In addition to specifying some minimum curriculum requirements, states have provided curriculum guides; with rare exceptions, these guides are rather sketchy course outlines, far from being complete curriculum materials packages.

One of the most important changes in the relationship of state departments of education to local school districts in recent years has been the increase in state subject-matter specialists available for advice and assistance to local districts. In most states, these specialists have been supported primarily by federal funds. Their services are spread thin, their expertise varies tremendously, and they must walk gingerly to avoid infringing on local autonomy; nevertheless, they represent a potentially useful source of change in curriculum matters and teaching practices.

4.74 The federal government has played an increasingly important role in education and particularly in elementary and secondary education since the passage of the Elementary and Secondary Education Act of 1965.

4.741 School support by the Federal Government has increased substantially but in all cases for special purposes, such as aiding impacted areas, assisting children from poor families, improving libraries and equipment, and fostering experimental and developmental projects of various kinds.

4.742 Research in education has been supported primarily by the federal government in recent years. The amount of support has fluctuated greatly, and the policy for support has been clouded with uncertainty. The administration of the research programs has been erratic in some parts of the government. In addition, much of the research has been done under the influence of the more prestigious elements of the university, with the result that it has not been oriented toward problems of school improvement as much as might be desirable. Nevertheless, federal programs of support for educational research offer great promise for supplementation and improvement of the major efforts of states, universities, and school districts. Hopefully, federal research programs will receive more funds and better direction, with more continuity, in the future.

4.743 Personnel training has taken a very large part of federal funds devoted to education in the colleges and universities; this has been mainly in the form of fellowships. At the elementary and secondary levels, funding has been mainly for support of inservice training programs, particularly summer institutes but also including a number of academic year programs with part-time or full-time training for experienced school personnel. Evidence to date of the results of the training programs for experienced teachers indicates a moderately effective upgrading of their knowledge and skills but very little impact on curriculum, teaching practices, roles of teachers and students, or schools and school districts.

4.744 Curriculum materials development supported by substantial funds has been undertaken for the first time in educational history during the last decade or so. Support has come mainly from the federal government, with some additional funds from private foundations. Commercial publishers, who have always supplied the bulk of our educational materials, have never invested significant amounts in developmental activities, although a few exceptions have occurred in the last few years. Toward the end of the 1960's, the federal support for curriculum materials development tapered off, and some conclusions could be drawn about the effects of this development endeavor. A number of outstanding materials were in fact developed in the 1960's and this could probably not have occurred without extensive federal support. The most important characteristics of the best of these materials are that they are academically and pedagogically sound and that they involve the student in a variety of creative and participatory learning activities. Their main shortcoming is that they were created for the most part to fit comfortably into the existing educational system, thereby reinforcing most of that system while bringing about useful but modest changes in content and teaching practices within the classroom.

4.745 New institutions of various kinds, both formal and informal, have been created by federal efforts in recent years and many of them will probably continue through the next decades and beyond. The precedent of substantial developmental support for curriculum materials can be considered an informal institution, now possessed of experienced and committed personnel and some public and institutional support; it will probably continue in the 1970's, although its health and vigor are not assured. Federal support of teacher education has also become institutionalized, with modest but increased support from universities and school districts which might possibly continue even without large federal support. The Regional Laboratories, Research and Development Centers, and ERIC Clearinghouses, established by the Office of Education, are formal institutions which are intended to have an indefinite life and may well last for quite a while if the performance of the system continues to measure up to the best performance of the elements now in those organizations.

4.75 Public support of private schools has been a forbidden area in the United States, due primarily to our strong tradition of separation of church and state. Whether or not the doctrine of separation of church and state logically prohibits public support of private schools, most Americans have felt that it does; one might suspect that there is a large element of anti-Catholic feeling supporting this judgment.

There has been increasing advocacy in recent years of a system which would give public support to privately-run schools. Most suggestions take the form of a voucher plan in which parents would receive a certificate good for a certain amount of money toward tuition at an public or private school approved by educational authorities. The chief argument for this plan is that it would introduce into our presumably sluggish, backward school system,

an element of healthy competition which would provide greater variety and hopefully greater efficiency and progress in the accomplishment of educational goals. Unfortunately, much of the support for the voucher system has been based on "fairness" to Catholics and others who send their children to private schools, rather than on greater effectiveness and variety of choice of schools. The prototype for the voucher system is the educational section of the GI Bill of Rights, under which millions of returning veterans went to schools of their choice after World War II. The church-state element of the support issue could be defused by prohibiting the use of vouchers in a church-supported or church-related school. This provision would, however, probably lose more support for the system than it would gain, and it would prohibit the use of a large and readily available pool of resources for testing the new system. Politically the school voucher system seems to have little prospect of adoption in the next decade. It does seem to offer a very hopeful potential and it is possible that an enlightened and more tolerant citizenry or a more desperate and discouraged citizenry may give it a trial.

5.0 Social Science and Education

5.1 The Role of Academic Disciplines. The division of knowledge into disciplines and sub-disciplines is taken for granted in the universities, but presents a perennial problem for elementary and secondary schools. Some comments on the nature and functions of academic disciplines may be useful here.

5.11 The nature of knowledge, as it is acquired, conserved, and disseminated, has encouraged specialization since knowledge was first pursued in a systematic manner. In ancient Egypt and in ancient Greece there were specialists in, for example, astrology, mathematics, and philosophy, although it was also common within the tiny intellectual elite of a given civilization to have individuals who knew or were presumed to know a very large proportion of the existing knowledge. The term "Renaissance Man" is sometimes used in a context which indicates that the Renaissance was the latest period in the history of Western civilization in which a single individual could be presumed to possess most of the existing knowledge of his day. The rapid--probably logarithmic--rate of growth of knowledge in the last six centuries, particularly in the natural sciences, has been accompanied by increasing specialization among the persons who discover, preserve, and disseminate knowledge. Every area of knowledge that has grown substantially has experienced an increase in its divisions and subdivisions. In the social sciences the identification of individual disciplines, other than geography and history, began about 200 years ago; for the most part, they grew out of philosophy, as did the natural sciences some centuries earlier.

Growth in the number of disciplines and subdivisions usually comes through fission of existing disciplines, but not always. Sometimes new disciplines or subdisciplines are formed by recombination of existing disciplines.

as in the formation of the fields of biochemistry, biophysics, econometrics, regional science, and--now searching for identity--environmental science.

5.12 Academic disciplines have found their natural home in the universities. There is a symbiotic relationship between disciplines and departments such that every discipline seeks to become a department, and any department that does not have a one-to-one relationship with an established discipline is unstable. There are strong forces within each department to maintain the identity of the department and of the discipline with which it is associated. Professional associations related to each discipline strongly reinforce the identity and continuity of the discipline and the administrative structure of the university gives some additional reinforcement, since stable, well-recognized departments are handy administrative units. The boundaries of disciplines, as defined by the departments within universities and by the professional associations, are moderately flexible with respect to including new subject matter or methods and discarding the old. The strong tendency toward subdivision of a field as its scope grows is usually handled at first by establishing subgroups within a department or discipline. Occasionally a subgroup, working against strong centrifugal forces, breaks off and becomes a new department or discipline. Much rarer is the phenomenon of a new discipline being formed from parts of two or more established disciplines, such as biophysics; of returning to the womb from which they came (no examples come to mind); or of disappearing for lack of substance or reinforcement, such as astrology.

Intellectual intercourse between departments for any purpose is a rarity. Parallel lines of investigation and duplicated discoveries in different fields may go unrecognized indefinitely. Borrowing of concepts, tools or data between disciplines is rare. Individuals who attempt to play a communicating and

interpreting role between or among two or more disciplines are likely to be less well rewarded by their colleagues and their university than if they concentrate their efforts in one field.

5.13 The social science disciplines in elementary and secondary schools have an ambiguous status. The whole program of courses or subjects, one at each grade level from one to twelve, which can be more or less related to the social sciences is called "social studies." The term derives its present currency from the National Education Association's 1916 Committee on the Social Studies. That Committee recommended subject matter for grades seven through twelve. In the following two or three decades, a fairly standardized curriculum for grades one through six evolved so that, for the past several decades, there has been a very high degree of similarity in social studies programs at all elementary and secondary grade levels throughout the nation. The curriculum for grades one through three has typically emphasized socializing the child and getting him acquainted with his environment; the subject matter of a number of social sciences can be identified vaguely in these three grades. Grades four through eight, ten, and eleven have been mostly geography and history. Grade nine is almost always civics, which is more closely related to political science than any of the other social sciences, and grade twelve is often "Problems of Democracy," which is likely to be more closely related to political science but may also contain elements of sociology, economics, and history. To an increasing extent in the last decade or two, there has been a growing number of elective social science courses and, in some cases, required courses in economics and sociology in senior high school.

The relationship of the various social studies courses to social science disciplines as they are recognized in the universities has been both vague and controversial. Sometimes the courses are considered as junior-level

versions of university courses. Often, particularly but not exclusively in the history courses, there is a clear effort to indoctrinate students with patriotism and the real or alleged virtues of heroes in American history. Throughout many of the courses, and particularly in civics and Problems of Democracy, there is a conscious effort to create "good citizens." Throughout the past 50 years there has been a sizable group among social studies teachers who have felt that the major purpose of the social studies is to create good citizens. They emphasize knowing U.S. history, knowing the mechanisms of government, and having favorable attitudes toward our history and toward citizenship participation in the processes of government.

5.14 The academic disciplines must become more fluid and more functional if they are to serve fully the needs of elementary and secondary education as well as those of the university. The view that some university academicians hold of the social studies in elementary and secondary grades has some validity--that they are non-rigorous, overly concerned with facts, and too much involved in indoctrination.

A typical view that elementary and secondary teachers and university social studies methods teachers have of the social sciences also has some validity--that the social sciences are too specialized, too little concerned with applications, and too little concerned with values. These faults of the social sciences are attributable in part to their isolation and rigidity as academic disciplines. If the academic disciplines were to become more communicative and flexible in their relations with each other and with the entire educational enterprise--which is a matter of degree and does not by any means require abandonment of the principle of specialization--they would enrich themselves, further the progress of knowledge, become more useful to their colleagues in the schools of education, and be in a position to play

a more useful role in improving the social studies in elementary and secondary schools.

5.2 Definition of Social Science. Science is concerned with explanation, prediction, and control. A particular science focuses on explanation, prediction, and control of some particular subject matter or phenomena. The purpose of social science is to explain, predict, and control the behavior of individuals and groups. It is amazing how many people, including social scientists and social studies teachers, will not accept this definition of social science. The idea of "controlling" the behavior of individuals and groups seems to have sinister connotations in the minds of many people, perhaps suggesting cruel and totalitarian governments. "Influencing" the behavior of individuals and groups might be a more palatable term. Most people, and particularly educators, spend a major portion of their waking hours trying to control, or influence, the behavior of individuals and groups. This is mostly a seat-of-the-pants operation based on little knowledge of social science.

The fact is that most people do not "believe in" social science. Many people think that individuals and groups are essentially unpredictable--that is, not subject to scientific investigation. There is also a common feeling that it is somewhat immoral or unethical to probe very deeply into human behavior, particularly in certain restricted areas such as sex, political beliefs, and personal financial matters. Yet many people, knowing little about social science and rejecting both the practicality and morality of studying human behavior, consider themselves experts on human behavior.

Differences between the natural sciences and the social sciences have been exaggerated, to the detriment of the social sciences. There are, of course, valid reasons for differentiating groups and subgroups of science; these reasons lie partly in the nature of the phenomenon man is investigating

partly in the state of man's progress in conceptualizing the scientific problems at any particular point in history. The natural sciences, having overcome most of the taboos against investigation of their particular fields of interest several centuries ago, have made sustained and brilliant progress in explaining, predicting, and controlling natural phenomena.

The belief that the social sciences are "far behind" the natural sciences is probably universal. The belief that this gap is natural, expected, and will probably always exist is very common.

Whether the social sciences are "naturally" more difficult to work with and can always be expected to lag behind the natural sciences can at least be questioned. The fact that many persons think the lag is natural and inevitable may itself be a hindrance to progress in the social sciences.

5.3 The Social Sciences. Defining the particular subject areas or subject matter of the social sciences is a hazardous undertaking, since there is a variety of partisan viewpoints.

5.31 Traditional areas of social science--which does not necessarily mean non-controversial--are the following.

5.311 History. Many historians, probably a large majority, are unwilling to call themselves social scientists. Almost to a man, they would shy away from the idea of "controlling" human affairs of any kind, although they are not averse to a mild form of "influence" perhaps akin to the kind of influence exercised by novelists and poets. Historians are almost as shy of prediction as they are of control. They are very much involved in explaining past human behavior although they typically emphasize the idiosyncratic nature of their explanations and shy away from generalizations. There is a strong element of the humanities in history and historians often speak of the joy of knowing about the past, of the pleasures of getting acquainted with the

great personalities of history, and of the pleasure and usefulness of "understanding" the past--although the meaning of "understanding" is left vague.

History is on the defensive in the elementary and secondary school curriculum, partly because it has been notoriously dull to many students, partly because it occupies most of the curriculum time allotted to social studies. There has been a growing belief on the part of social scientists and social studies teachers that more of the social sciences should be represented in the elementary and secondary curriculum. History, although still dominant, is declining--partly by absorbing more specific social science content into itself, partly by giving way to other courses.

5.312 Geography is second to history in the amount of time allocated in the elementary and secondary curriculum. Geography contains large elements of both the social sciences--in the form of human and cultural geography--and the natural sciences--in the form of physical geography, which sometimes edges into the domain of geology. Geography typically has a prominent place in the curriculum, especially in grades three through eight. It is often combined with history, particularly in studying countries other than the U.S., and specific courses vary greatly in their mix of human and physical geography.

5.313 Political science has not been recognized directly as a part of the elementary and secondary curriculum. Nevertheless, its subject matter, if not its spirit of inquiry, overlaps substantially with the typical ninth-grade civics course and twelfth-grade "Problems of Democracy" course. In addition, the subject matter of political science often overlaps the content of history. Much of history is concerned with laws and government from the standpoint of the total national or international system, while much of the content of civics and Problems of Democracy is concerned with legal systems and government from the standpoint of the individual. Both of these approaches

can profit from greater use of the knowledge and methods of political science.

5.314 Economics is commonly taught as an elective subject in senior high school, typically resembling a junior-grade introductory college course. A related course called Consumer Economics, looking at the economic and business system from the standpoint of the individual, is sometimes taught as a separate course and sometimes incorporated elsewhere in the curriculum; for example, in civics and Problems of Democracy. In addition, a large amount of materials incorporating economics has been prepared for supplementary use at all grade levels, but particularly in junior and senior high school.

5.315 Sociology is being offered with increasing frequency as an elective course in senior high school, typically resembling an introductory college course.

5.316 Psychology, like geography, cuts across the natural and social sciences and contains a large element of each. Psychology courses are offered in a few secondary schools. The emerging academic discipline of social psychology seems a likely candidate for future popularity in the school curriculum as a replacement of, or integration of, sociology and psychology.

5.316 Anthropology also combines major elements of social and natural sciences. It has played a minor role in the elementary and secondary curriculum but may well experience a substantial relative increase in popularity at a number of grade levels during the 1970's.

5.32 New social science areas. The social studies have been borrowing from at least two academic areas--philosophy and law--to an increasing extent. Influenced by the changes in the substance and needs of the university, the social scientists are also extending themselves in the same direction.

5.321 Philosophy has been the mother of most of the natural and social sciences. In establishing their identities, the sciences deliberately excluded concerns about values and goals, leaving these in the domain of philosophy. Now both the natural and social sciences, and particularly the latter, are being pushed toward a greater concern about values and goals--partly by the demands on scientists to take a more comprehensive view of the relationship of their subject areas to humanity's problems, partly by the refusal of social studies teachers and curriculum developers to accept the sterility of "value-free" sciences--especially value-free social sciences.

5.322 Law is also making increasing contributions to the social sciences and still more to the social studies. Law has always been a concern of political scientists, even though political scientists and the law school professors have very little professional interaction. Sociology and economics have always had some concern with certain aspects of the law. Now law is becoming increasingly important in the social studies curriculum, as curriculum materials for and about minority groups become increasingly engaged with the real problems of intergroup relations in society.

5.4 Social Sciences as Subject Matter. It is clear that the subject matter of the social sciences and the social studies are almost congruent, even though some tempests have been brewed in teapots about the question of whether the social studies are derived from the social sciences or have a separate and broader identity of their own. It is historically interesting to know how the social sciences have been related to social studies in the past, and it is useful to consider how social science might be most fruitfully related to social studies in the future.

5.41 Individual social sciences, as already indicated, have been clearly identifiable in many parts of the social studies curriculum. Geography and

history have been prominent. Political science has been in the background of the typical ninth- and twelfth-grade courses, as well as in much of the history that is taught, and courses entitled economics, sociology, and anthropology have been given with increasing frequency in recent years. The number of specifically identified social science courses will probably increase in junior and senior high schools in the next decade, with geography and history declining somewhat. Hopefully, the social sciences thus taught will be academically more sound than has been true in elementary and secondary grades in the past, more oriented to dealing with social problems than social sciences typically have been at the university level, and more explicitly related to each other and to a common body of interest and methodology of the social sciences in general.

5.42 Relating and integrating the individual social sciences requires more attention than it has been receiving in the universities. A certain amount of ad hoc amalgamation of the social sciences has taken place in the social studies, particularly in the early grades; but these efforts have not had a good conceptual base. In the universities, for reasons already mentioned, there is little communication among social scientists in the different disciplines, little effort to find commonalities and relationships between the social sciences, and little support for individuals who attempt to find bases for integrating the social sciences. Some of the interesting work now being done by social scientists to find some conceptual and theoretical relations among their disciplines is but a result of the apparent need of elementary and secondary curriculum developers for such a base. Hopefully this work will continue and grow.

5.43 Values have always played a prominent role in the social studies and in the last decade this role has become more explicit, less doctrinaire,

and a little more scientific. In the universities the "value-free" posture of most social scientists is giving way to a more realistic and useful view of the nature of values and their role in the social sciences. A useful interaction between the schools and the universities is taking place in the development and clarification of methods of treating values in the social sciences, to the benefit of all concerned.

5.5 Education as a Social Science. Law and medicine are often considered not as sciences but as applications of other sciences. A science must have a strong theoretical component concerned as much or more with deriving and testing explanations as with making applications of them. It is a matter of degree, of course, and there is a constant pulling and hauling within every field of professional endeavor to make it more theoretical or to make it more practical.

5.51 Can education qualify as a science? Many people consider education to be an application of the knowledge of other fields, particularly psychology. But psychology has made a very thin contribution to education and education is, in fact, concerned very broadly with explaining, predicting, and controlling the behavior of students. It would seem to qualify as a social science par excellence. The main argument against such a classification might be that education does not have a sufficiently theoretical base to be called a science and perhaps it does not have sufficient aspiration to create such a base. But the vigorous efforts of educational researchers and practitioners to learn more about all aspects of the educational process would seem to qualify education as a science on the basis of aspirations, if not accomplishments. And perhaps aspiration, if sufficiently ardent and enduring, should be ample a qualification.

It is likely that most educators are not clamoring to be known as the practitioners of a science and would probably shy away from the exactitude implied by the word "science." Many educators and others are fond of saying that "teaching is an art." This phrase could be taken to mean that there is nothing that can be learned about teaching--a very discouraging idea in view of the tremendous expenditures made on teacher education--or that the good teacher is constantly making intuitive and creative leaps. In the latter sense, nuclear physics is also an art.

5.52 Education can build on and integrate all of the social sciences for its own purposes whether or not it is considered "the eighth social science." Education has hardly begun to make full use of pyschology in its efforts to explain, predict, and control the behavior of students, much less the substance of sociology, social psychology, economics, political science, and anthropology. Education can be a more creative user of the knowledge of the social sciences and in the process it may integrate, reform, and discover enough knowledge in the general area of social science to itself warrant the name of social science.

5.6 Schools as the Subject of Social Scientists' Study. Schools and educational systems present a largely unexploited field of study for social scientists. The sociology of education is a well established subject but it has not used all of the sociologist's tools to study the full range of problems of schools and school systems. Similarly, educational psychology has been much narrower than it might be if the full attention of some able psychologists were turned to a full study of schools and school systems. The history of education has also been studied in a narrow way. One could imagine a much broader use of sociology, psychology, and history in learning about schools and school systems as well as interesting results from the study of

anthropology of schools, the political science of schools, and the economics of schools.

Knowledge gained from studies of the schools by social scientists from the various disciplines should be of tremendous interest to educators, helping them to build a very broad and deep view of education and the educational system and perhaps helping them to build a social science called education. The happiest result that could be imagined from the study of schools by social scientists would be a great cooperative effort in which social scientists and educators worked closely with each other in building an understanding of learning and school systems, each discipline contributing its own expertise, learning from others, and creating a pool of theoretical and practical knowledge which would carry education and the schools to new heights of creative accomplishment.

5.7 The Schools as a Subject of Social Science Study by Students. If social scientists and educators find the study of schools to be interesting and productive, students of the social studies, social science, and education at all levels could become students of the processes of education in general and of education in their own schools in particular. A study of the successes and failures of the educational process through which they are going, with facts, concepts, and hypotheses supplied in part by the social scientists and educators who are also studying the system, could become a fascinating part of the curriculum.

5.8 Needed Exploration of Social Sciences for Educational Purposes. The development of the social sciences is an organic matter influenced by many forces and supported by many kinds of resources. There are some particular kinds of developments in social sciences which would be especially useful for educational purposes; and through their interactions with education, these same explorations might have beneficial effects on the progress of social sciences.

5.81 The nature and structure of individual social sciences is a common topic of investigation in each discipline. These investigations are, however, generally very discursive. Some attempts to distill the essential nature and structure of particular social sciences for use in social studies curriculum development have been extremely useful both to the curriculum developers and to the social scientists who participated in developing these structures. It would be useful to have further work of this kind done by more social scientists in each of the disciplines.

5.82 Interdisciplinary approaches to the social sciences. We have alluded to the undesirable degree of isolation among social sciences in the universities, and to social studies curricula in which the substantive content is poor. What is needed is to bring the social sciences closer together and to improve the scientific content of the interdisciplinary subject areas in the social studies is one of several useful approaches to relating the social sciences to each other. Several such approaches will be mentioned briefly.

5.821 Problems often bring people of diverse areas of expertise together. Urban planning and environmental degeneration are examples of problems that have stimulated cooperative work among experts from different fields. The "problem-centered approach" has been used extensively in social studies curricula, with the intention of focusing the appropriate knowledge and approaches of various disciplines on a single problem. The expertise to make effective use of various natural and social sciences in learning about problem-solving in social studies curricula has usually been lacking.

5.822 A tool-centered approach to interdisciplinary work has been developed by Alfred Kuhn. Kuhn has found certain concepts, analytical tools, and processes which are common to a number of social sciences and has suggested learning about these tools is a way to learn about the commonalities of the social sciences and about the problem-solving potentialities of the tools.

5.823 General systems is another promising approach to interdisciplinary work. Kenneth Boulding and Alfred Kuhn have been pioneers in the concepts of general systems as applied to the social sciences. One of the best known system forms is the cybernetic system, which has very wide applicability in the study of both natural and social phenomena.

5.824 The study of the processes of social change has also been suggested as a focus for interdisciplinary work in the social sciences. Such studies could draw upon many of the social sciences for the development and testing of hypotheses and the results of these studies would have wide applicability in the social sciences and particularly in the school systems.

5.83 Applications of social science knowledge to schools systems. In a preceeding section we discussed the potentialities of focusing the scientific interests of social scientists on the schools. The work suggested just above on the nature and structure of individual disciplines and on various interdisciplinary approaches might serve to aid the cooperative study of schools and to make this study more easily comprehended by, and used by, teachers and students of the elementary and secondary grades.

5.9 Relating the Frontiers of Social Science to Social Science Education. The impression is sometimes given that some educators do not think it matters much if the content of the social studies is oversimplified and out of date. The implicit argument seems to say that elementary and seoondary students are not going to learn much about science or aocial science in the first place, that they will soon forget what they have learned, and that they will have to start over to really learn the subject matter when they get to college or graduate school. A much more hopeful view of the educational process, as a potential if not as a fact, is that children should be taught the best habits of scientific inquiry in the early grades, since what they learn there will

affect their outlook and accomplishments later on; that young children can be taught the newest and best in science about as easily as they can be taught old and questionable science content; that students will be more interested and eager to learn if they know they are learning the best there is to learn; and that future gaps between the knowledge of students and the frontiers of knowledge will be easier to close if the initial gaps are as small as possible.

5.91 The social science education of young people should being in the earliest grades with appropriate teaching about the most up-to-date knowledge and the most up-to-date methods of acquiring knowledge.

5.92 If we abandon the idea that it makes little difference if the content of the social studies is watered down and outmoded, then not only is the way opened for great improvement in that content, but it will then become feasible and interesting for outstanding social scientists to become involved in the processes of improving social science education in the elementary and secondary schools. Social scientists would, we believe, profit from close contact with education at the elementary and secondary levels, as well as at the undergraduate or graduate levels. They would get a better picture of education and educational processes from this broader view, which would improve their own contibutions to learning and teaching in the university as well as improving their ability to contribute to elementary and secondary curriculum development.

6.0 The Learner.

This section is an elaboration of a previous section which dealt briefly with the learner in the context of the other major components of the educational system.

6.1 Alienation. We believe that education has improved steadily throughout the last century and that there was probably some acceleration in the rate of improvement during the 1960's. Nevertheless, the general dissatisfaction with education seems to have grown and become critical in the last few years--a phenomenon that can only be explained by standards and aspirations that are rising faster than accomplishments. In particular, the students themselves are taking a closer and more critical look at the educational process and finding that it has many faults; the progress of the last century, however great, does not have much effect on students' views of the schools as they now are.

The shortcomings of the schools from the viewpoint of the learner are of long standing. Much of the process of education is exceedingly dull. All of it, up to a certain age, proceeds under the heavy hand of compulsion. The goals of education, from the standpoint of the learner, are mostly unseen, remote, or unaccepted. Many of the tasks set for the learner are things he cannot do. Authority in the classroom, the school, and the school system is exercised arbitrarily. Children of the poor and of minority groups commonly suffer from all of these shortcomings in even greater measure than do the children of the white, prosperous majority. In the following paragraphs we outline some of the more promising directions that may be taken to overcome these inadequacies and faults.

6.2 Making Tasks Do-able. One of the greatest obstacles to accomplishment of any kind is the feeling that a job cannot be done and, in particular, that there is no way to begin the task. An employer can divide his employees

into "can-do" and "can't-do" types, with the latter usually predominating. Teachers at the secondary and university levels have to deal with a preponderance of "can't-do" students. The discouraging but common question from students who have been given an assignment which requires some initiative is "What do you want me to do?" On the other hand, one of the joys of visiting a primary school classroom comes from seeing a great many children engaged with tasks that they apparently think they can accomplish. Many "can-do" primary school children become "can't-do" secondary and university students. The change may be in large part a result of conditioning in the schools--a continuous process of assigning tasks that are inappropriate to a particular learner at a particular time. Several kinds of remedies are needed.

6.21 Diagnosis. We need to know much more about where the learner is at many checkpoints along the way. Grades, as they are now administered, are completely inappropriate for this purpose. Diagnoses of where the learner is on any particular learning task, administered mainly by the learner himself, are much needed.

6.22 Placement. Based on appropriate diagnoses, the student should be placed in appropriate situations--large group, small group, or individualized--in which he has a reasonable chance of successfully fulfilling the tasks assigned to him or which he assigns to himself.

6.23 Individualization. Once the student is placed in an appropriate learning situation, a large part of the learning process should be such that he has some choices open to him and can proceed at his own pace. Individualization does not necessarily mean that a student works alone. It can mean groupings of various sizes, including attendance at large lectures; but there must be some approximate fit between the current state of the individual and the learning experiences to which he is exposed. Only a small beginning has been made in constructing appropriate materials and procedures for the

individualization of learning.

6.3 Learning Autonomy. An important characteristic of an effective adult is the ability to make good decisions--to exercise autonomy and to get things done. Learning autonomy should be a major objective of the whole educational process. Autonomy should be learned both with respect to specific tasks and with respect to the structuring of those tasks in the whole context within which education takes place. Autonomy is the major ingredient of "inquiry" and of "learning to learn."

6.4 Exercising Autonomy. Every continuous learning process is always enlarging its scope. If autonomy is to be learned, the scope of autonomy must constantly be enlarged and the autonomy must be exercised within its continuously increasing scope. Participation in decision-making on the part of the learner must always be circumscribed by outward circumstances, as in the case with all decision makers. But if autonomy is to be learned by students, it must be real and it must be constantly expanding so that it challenges the decision-making powers of the learners. The slight progression in the scope of decision-making powers of learners that now takes place between kindergarten and graduation from college is completely inadequate for the training of adults who are autonomous in all aspects of their lives and, in particular, autonomous with respect to learning.

6.5 Mutuality. The learner in our system looks for the sources of learning in the teacher and in the materials with which the teacher equips him. He does not consider himself an important resource--he is not autonomous--nor does he consider his fellow students as important resources. Contacts between students are social--either friendly or frictional--and are generally considered to be detrimental to learning. Since the student relies mainly on the teacher for learning, a very important way of improving education is generally considered to be a lower and lower student-teacher ratio.

Presumably a one-to-one ratio between teacher and student is ideal; or perhaps more than one teacher per student. This is an impractical route to take in improving education.

Relationships among students can contribute much to mutual learning, but effective learning situations must be planned and must be based on a fund of knowledge about this type of learning.

6.51 Students in small groups can learn from each other and should be given encouragement and opportunity to do so. Teachers can suggest methods of interaction and the students themselves can invent methods of interacting. This kind of learning must start early. If students are given any kind of group tasks after many years of the usual classroom learning, they will normally sit and wait to be told what to do by the teacher.

6.52 Small-group dynamics is a subject about which much is now known. A study of this area is useful in itself and can give some guidance to effective methods of mutual learning in small groups. There are methods of studying interactions in small groups so that the participants learn about the various roles that can be played by individuals and which of these roles are functional and dysfunctional in accomplishing various kinds of group tasks.

6.53 Cross-ability helping, with the more able students in a class helping the less able,offers promise as a method of learning without direct help from a teacher. In the competitive atmosphere of our schools, it is difficult to arrange cross-ability helping because everyone knows immediately who in a pair or a small group are the "dummies" and who are the smart helpers.

6.54 Cross-age helping probably offers still more promise than cross-ability helping within a class. Experience with cross-age helping in elementary schools indicates that a two-year gap between the helpers and those who are helped works well, overcoming most of the stigma attached

to one student who is helped by another. Experience also shows that the benefits to helpers may be as great as the benefits to those who are helped; teaching is an extremely effective way to learn at every age level.

6.6 Perceived Useful Goals--"Relevance." The term "relevance" is used so frequently and loosely that its meaning is vague. In the context of education it usually refers to goals that are pertinent in some sense to the learner and to whether or not the learner recognizes those goals as being pertinent to him. Both dimensions of relevance are important--that the goals are useful to the learner and that he perceives their usefulness. There are several ways in which goals may be useful to learners.

6.61 Vocation. Relation to future gainful employment is an important criterion of education. Hopefully learning for future vocation can take place simultaneously with learning for other purposes. The trouble with much vocational education, particularly that given in the secondary schools for less able students, is that it puts vocational learning in an extremely narrow context, pointed toward very specific types of jobs, rather than giving simultaneously a broad view of the context of possible future employment, of possible changes in that vocational picture, and of the autonomy which should be a major part of all learning.

6.62 Avocation. Learning for fun--having fun now or increasing capacity for enjoyment in the future--should infuse all learning. Typically it does not do so now. Some combination of the dullness and compulsion of school, the Puritan work ethic, and other ingredients has squeezed much of the joy out of a potentially happy experience.

6.63 Coping. The third general useful goal of education is learning to cope with situations of all kinds--with classmates, teachers, the school establishment, merchants, parents, and society at large. Coping is closely

related to autonomy and, like autonomy, is squelched rather than nourished in our school system. Coping requires knowledge of how to deal with people in various situations, knowing how to explore and assess alternatives, and knowing how to assess outcomes. Coping skills can be learned with respect to all kinds of tasks and subject matter, but they are particularly important in interactions with people, and the social sciences should have much to contribute to the systematic learning of coping skills. While much has been said in the history of education about the methods and merits of vocational and avocational education, practically no attention has been paid to coping, except with respect to some limited aspects of vocational training.

7.0 The Education of Educational Personnel. In this section attention is given to some of the requirements of a competent teacher and to the various sites where educational personnel can be trained--in universities, school systems, and the community.

7.1 Required Knowledge and Skills.

7.11 Openness is a very basic requirement for teachers--openness with respect to the tentative nature of all knowledge, to the variety of modes of knowing and learning, to change in prevailing teaching methods, and to changes in the other institutions of learning. Openness should always be the pedagogical posture of the teacher, but this requirement is particularly needed now if teachers are to be agents of change rather than roadblocks to change. A higher proportion of teachers than of the general population is rigid and authoritarian. They believe in right answers, that they should know the right answers, and that they should give the right answers to students. They feel uncomfortable if they do not know right answers about the subject matter under consideration in the classroom. Openness does not mean the abandonment of educational leadership on the part of the teacher. What a teacher knows should be shared with students, in appropriate ways, but what the teacher does not know should not stand in the way of the students' learning, as is the case in so very many classrooms. Students are effectively discouraged from learning anything that the teacher does not know.

7.12 Pedagogical skills that are creative and varied are needed. In most classrooms the range of pedagogical skills exhibited by the teacher is very narrow. In many college classes, which in some cases become models for future teachers, lecturing occupies most of the time, supplemented by occasional unsuccessful discussions and by essay and multiple-choice tests. In secondary schools there is somewhat less questioning and somewhat more discussion--the

discussion often being a form of extending a lecture, which might be called "guess what I am thinking": the teacher has in mind a certain goal to be reached and the students guess what they should say to help the teacher reach that goal. Recitations disguised as discussions are also common.

7.121 There are many types of classroom questions that can be used to stimulate thinking and learning in addition to such commonly used questions as "Tell me about...," "What happened when...?", and "Any questions...?"

7.122 Discussion methods typically used are neither varied or imaginative. There are many other possiblilities, including role-playing, simulations, and problem-solving, many of which work better in small groups than in the plenary sessions which are commonly the settings for class discussions.

7.123 Small group interaction can be arranged and used for a number of purposes, including questioning, discussion, problem solving, problem posing, and brainstorming.

7.124 Etc.--the variety of ways in which teachers can interact with students and can set up learning situations is tremendous, but the range of actual teaching-learning configuations used in practice is small.

7.13 Organizational skills are needed by a teacher who is to function efficiently, particularly if he is interested in change and improvement.

7.131 Defensive organizational skills are needed to defend oneself against damage and frustration by the system. Everyone gains some skill through experience in coping within an organization. Teachers (and students, too) could be more effective if they were exposed to systematic knowledge about how to get along in an organization.

7.132 Active as well as defensive organizational skills are needed if the organization itself is to change. As mentioned earlier in this paper, change within organization, including change within educational institutions, has been

a recent subject of study and there is more to be known about this matter than one usually picks up through casual experience.

7.14 Social science posture and knowledge. In addition to the general knowledge and skills just discussed, social science educators need particular knowledge and skills related to the social sciences.

7.141 A scientific posture is essential. If social science educators do not believe that social science can and must be scientific, they are worse than useless to social science education. A belief in the scientific nature of social science does not mean that the educator must believe that social science has reached an advanced state of scientific precision, nor that social science cannot have intimate associations with the humanities. It does mean that the educator must believe that human actions are subject to scientific investigation and that progress can be made toward explaining, predicting, and controlling the behavior of individuals and groups.

7.142 The structure of knowledge in the social sciences must be known by social science educators. The principal modes of thought, concepts, hypotheses, theoretical frameworks, and types of available data must be familiar in some degree to social science educators.

7.143 Value analysis cannot be ignored by social science educators, although the posture of "value-free" analysis has been popular among social scientists. Values are important data, as is seldom denied by social scientists. However, values are also subject to logical and scientific investigation and analysis, and they must always play an important role in efforts to control as well as to explain and predict human behavior.

7.144 Tests and measurements are important for all educators, but particularly so for social science educators. In addition to using the best prevailing methods of testing and measuring, some social science educators should devote

their special talents related to knowledge about people and their interactions to the development of a broad, humane, functional array of methods and instruments which could play a crucial role in educational improvements. Comments about some of the requirements for change in our present methods of testing, measuring, and grading have been made elsewhere in this paper.

7.2 The Education of Educational Personnel in the Universities. Universities are now responsible for the education of their own personnel and for the education of elementary and secondary school personnel. They should be concerned about improving these educational processes and also with constant experimentation and testing of their own educational methods, including analysis and dissemination of information about their successes and failures in education.

7.21 The education of university personnel.

7.211 General requirements for the education of effective social science teaching personnel include the following elements. Good talent must be recruited; universities have done well in getting strong intellectual talent, but not so well in turning that talent to skill in teaching. All teaching personnel in a university should have more than a casual interest in the methods of teaching, whether they are teaching future teachers or others. There should be communication and cooperation among all parts of the university on teaching methods and innovations, and, where teachers are being trained, on particularly interesting and successful methods for educating teachers. Social scientists who teach in universities should know their subject matter well and they should also know much more than they do now about teaching and teaching methods.

7.212 University programs for teaching university personnel should be explicit in their aim of training people to fit their future roles. In addition to offering programs to train good social science teachers for the university level, universities should also offer specially designed programs for social

science education researchers, social science education curriculum developers, and social science education school consultants.

7.22 The education of school personnel. Social science and education departments and schools in the university should cooperate to improve and broaden their present programs for educational personnel. Future teachers should receive a good training at the bachelor's and master's levels in which knowledge of social science and knowledge of education and teaching are well integrated. Programs at the M.A. and Ph.D. levels should be offered for school resource personnel in which social science education and teaching knowledge are also integrated. Training for paraprofessional personnel is also needed, which could consist primarily of short courses, again with well integrated social science and education knowledge.

7.23 Implementation, testing, and dissemination of findings about successes and failures in educating educational personnel should be a continuing task of universities. Universities most interested in self-consciously upgrade the education of all educational personnel might establish pilot centers which would gather and disseminate information about the efforts of their own faculty as well as efforts of other centers and faculties. These could be joined together in a communication network dedicated to improving, documenting, analyzing, and disseminating information about the education of educators.

7.3 The Education of Educational Personnel in School Systems. School systems now spend a very small part of their resources for educating personnel. The great bulk of their funds goes to teaching administration and physical facilities. Inservice education is carried on through the assistance of subject matter specialists, supervisors, or consultants, through encouraging and facilitating attendance at university institutes, which are financed mostly by the federal government; and through a very small number of workshops or other training programs conducted by the school system

themselves. School systems participate in preservice education by using student teachers, usually for eight to sixteen weeks, in the student's senior year. Modification and expansion of all of these activities are desirable.

7.31 Preservice education involvement of schools has consisted only of hosting student teachers, while this activity is considered the most valuable part of their education by many teachers, there is also a feeling that it is too little and too late. Experience in actual classroom situations earlier and for a longer total period of time and with closer ties to their formal education in the university would be advantageous to teachers in training; a few schools of education are already moving in this direction. With more supervised classroom experience, student teachers would then be able to take on more responsibility as student teachers, thus better preparing them for the time when they will have full classroom responsibilities. Hopefully they would be educated in classrooms in which many of the changes suggested in this paper are well under way.

Current dissatisfaction with teacher education has led to suggestions for transferring many of the training responsibilities to the school systems themselves. This would bedone by making the schools training centers and laboratories for student teachers, probably with considerable staff support from nearby universities. Courses taken at the university might still be a large part of a student's education; the big difference is that the schools would be in charge of the program and would send student teachers to the universities for a part of their training, rather than the other way around. Whether the schools would be able to furnish more exciting and effective teacher education programs than the universities now do is questionable. What seems most promising is a highly collaborative partnership between the universities, the schools, and the community in educating teachers.

Another way in which schools could participate in the education of future teachers would be to arrange for experienced teachers to assist professors of education in instruction. This could be part of an extensive program of interchange of resources between schools and universities.

7.32 Resource centers in schools and school districts should provide a base for inservice education and should be richer in resources and more active than they are now. The decrepit collections of old books and magazines which now serve as "professional libraries" in some schools would be upgraded and absorbed in the resource centers. A few school districts have good resource centers, staffed by able personnel. They have good equipment, a wide array of new materials, and serve as a center for disseminating innovative ideas and materials. Typically, however, the school district resource is merely a dispenser of textbooks and individual school resource centers are mediocre depositories of books. To build good resource centers the most feasible route would probably be to concentrate resources at a school district center which would be well supplied with a great variety of equipment and materials, and to have the individual schools linked to the resource center by a librarian who works both in the schools and in the resource center, and by a system of loans and rotating displays.

Every school system should have the microfiche files, equipment, and informed personnel to make the Office of Education's Educational Resources Information Center fully available to teachers and other personnel. Protocol materials and workshop materials should be included in resource centers, with equipment and informed personnel that make them readily available to users.

7.33 Resource personnel for the school should be more varied, as already indicated and, to a large extent, can be trained in the schools. More and

better-trained subject matter specialists are needed. This need can be met to a large extent by the training and use of resource teachers who teach part of the time and work with their peers at other times. Resource personnel can also be drawn from the community and trained in the schools, and resource personnel from the university can also be used to a greater extent and trained by working in the schools.

7.34 Training teachers and administrators in the use of resource materials and personnel is needed once the materials and personnel have been made available. Many teachers are already skilled in the use of supplementary reading materials, probably because such materials were relatively available during their undergraduate education and in their teaching experience. They are much less skilled in using a variety of equipment--having been discouraged by the unavailability and unreliability of the school projector--and they are completely unskilled in the use of resource personnel.

7.35 Systematic classroom testing of new ideas and new materials is needed in place of the sporadic testing that now goes on. Designated persons in schools or school districts could be responsible for encouraging testing and comparisons on a systematic basis without infringing very much on the choice that individual teachers should have in trying out new ideas and new materials.

7.36 Systematic reporting, analysis, and dissemination of the testing of new ideas and materials should accompany the systemization of the testing itself. The trying out of new ideas and materials now goes on in a vast number of the nation's classrooms. The sources of things tested are curriculum development projects, publishers, and, to a still greater extent, home-produced innovations. Efforts to document and share successful innovative experiences are negligible and the sharing of information about failures is nonexistent.

A tremendous quantity of potentially useful ideas and experience is thus being lost every day. Systems for reporting, analyzing, and disseminating informa- about innovative efforts within schools, within school systems, and between school systems could contribute much to creative and intelligent change in the schools, at relatively little cost. Subject matter specialists and resource center personnel might be responsible for organizing this information system.

7.4 The Education of Educational Personnel in the Community. In response to public criticism and suspicion of the schools, particularly on the part of minority groups, and related to the long-standing suspicion that schools are not sufficiently engaged with the real world, there has been much talk of moving school activities out into the community or of somehow bringing the community into the schools. There has not been much action in these directions, however, because people don't know how to do it. Some of the exploratory and developmental activities that could take place in this area are the following. They might well be undertaken cooperatively by school and university personnel.

7.41 Inventories of the learning sites and learning experiences based in the community could be undertaken. The inventory could consist of the few actual projects that have taken place around the country, plus brainstorming and investigation possible local learning sites and experiences.

7.42 Inventories of resource personnel from the community could be undertaken. Ideas about school-community interactions could be generated with small--both matched and mixed--of judges, doctors, city employees, social workers, businessmen, lawyers, labor union officials, etc.

7.43 Planning for and training school personnel in the use of community resources could follow from the inventories. Planning and training would go hand in hand, particularly in the early stages of exploration.

7.44 Trials of community learning experiences would follow the planning and training phases, with, of course, the planning and training continuing as the trials went on.

7.45 Reporting, analysis, and dissemination of trials of community learning should be instituted from the beginning and shared with the rest of the school system and between school systems. Reports of failures as well as successes are essential. The whole process of creating, testing, and evaluating community experiences could be an exciting cooperative project of community, school, and university people.

7.5 Overcoming Institutional and Community Rigidities. The changes suggested in this section have an uphill battle against personal and institutional fears, rigidities, and apathy. The suggested changes in posture and skills of teachers threaten the security of teachers, which is based on years of presumed success operating within the present established system. The suggested changes in the university would be considered an unnecessary and unrewarding diversion of resources from the more important tasks of the university, probably more so in the minds of professors than of administrators. The suggested changes in school systems go against long established procedures and assumptions, threatening the institutional security of both teachers and administrators, and call for a flexible use of physical, financial, and personnel resources that is now difficult to imagine. Rigidities in the community might be the least troublesome of all since there are now so few established and institutionalized modes of school-community educational operations. The rigidities and apathy are great, but the forces for change and improvement may be strong enough to bring about some substantial changes in the education of educational personnel.

8.0 Curriculum Materials Development

The role of curriculum materials in the past, present, and future has already been discussed briefly. Curriculum materials, including textbooks, have been and probably always will be an extremely important part of organized learning experiences. They have been deficient in the past with respect to sophistication of subject matter, variety of format, appropriateness to the needs of students and teachers, and evaluation.

8.1 Meeting Student Needs

8.11 Engagement. While much of the current criticism of education is in terms of lack of "relevance"--presumably referring to present or future vocational and coping skills--we suspect that much of the criticism of education would be allayed if it were merely interesting and fun. Some of the requirements of making learning experiences interesting and fun are that they should be mostly active rather than passive; include choices and decision making; have variety; have structure and sequencing of various links that make sense to the learner; be appropriate to the ability, experience, and background of the learner, which would help to make them do-able; and build confidence and a can-do attitude.

8.12 Appropriateness of goals. In addition to the foregoing characteristics, learning experiences should also be appropriate to present and future goals of the students, preferably goals that the students themselves understand, appreciate, and accept. These may be both personal and social goals, hopefully an appropriate mix of the two.

8.121 Professional, vocational, and coping skills have been identified above as goals that the student can and should perceive and accept. The skills learned to achieve these goals should be flexible and general enough to meet possible substantial changes in future demands and opportunities. Some other aspects of learning goals are listed below.

8.122 Inquiry, learning to learn, and continuous learning are emphases that can make present learning appropriate to future unknown conditions. Facts about the past and present and knowledge of how to use these facts to cope with present demands and opportunities cannot be neglected, but should be balanced by an open type of learning, which is nicely characterized as "learning to learn."

8.123 Learning should be transferable from the school to society. Possible some learning is appropriate only for coping with the learner's situation within the school, but hopefully much of what he learns in the way of vocational, avocational, and coping substance and skills will be transferable to both present and future living outside the schools. The possibility of such transfers can be enhanced by the enlargement of school-community interrelations in the educational process, which have been discussed above.

8.124 A global view of the nature of the physical environment, man, and society will hopefully be the broad framework for all of the students' learning. Such a view has several aspects, including a cognitive map of how the physical world operates; a cognitive map of the social-political-economic world; a map of the feelings and attitudes that influence man's behavior; and a map of the various values and value systems that form or influence the goals of man.

8.2 Meeting Teachers' Needs. The mythical picture of the capable elementary and secondary classroom teacher pictures him as a curriculum developer, expert in subject matter, expert in classroom management and child psychology, and possessor of a host of other skills. Materials that are abundant, varied, well structured, and well classified can relieve much of the heavy burden of responsibility that has been placed on the classroom teacher by our mythology.

8.21 Engagement. There is no reason why many materials cannot be as interesting to the teacher as to the students. Part of the mythology of the capable teacher is that he should know everything that is in the materials and something beyond. This need not be so. Teachers can and should learn with their students, should not be threatened by materials that they have not themselves mastered, and should not be threatened by students learning something that they do not know. Teachers might try applying a radical criterion to the materials they use: namely, that if the materials are not fascinating to the teacher, they should not be given to the students.

8.22 Utility. Textbooks, the most common type of classroom materials, relieve the teacher of much of the duty of one-way presentation of subject matter. Materials can and should relieve the teacher of a number of other duties and accomplish some tasks that the teacher cannot do. Learning drills can be performed better by programmed materials than by the teacher. Much of the evaluation can be done by students if the emphasis is shifted from judging and grading to diagnosis and measurement of progress. Materials can serve as guides to and supply the necessary props for the variety of classroom learning experiences.

Some of the outcry against "teacher-proof" materials is based on a fear that teachers may become technologically unemployed or may be demoted to "mere technicians." These are unjustified fears. It is true that handweavers and blacksmiths, as well as alchemists and most astrologers, have been put out of business by the forward march of knowledge and technology. To the extent that these practitioners had valid knowledge and a reasonable degree of flexibility, they were able to keep up with a changing world. It is unlikely that educational improvement alone, even if change should proceed much more rapidly than in the past, would decrease the personnel requirements

in education. Except for temporary dislocations--which have occasionally been longlasting and very harmful, due to the inflexibility of the physical and human resources involved--technology does not decrease employment. The individual may see his own particular job disappear, but from the standpoint of society, technology means greater and greater output produced by the total work force.

There is some justification for fear of educational change. Teachers and others who are extremely inflexible may indeed become outmoded by the process of educational improvement. From the standpoint of the health of the whole system, it might be well worth it to pension off inflexible teachers who cannot adjust to change--hopefully more generously than was the case with Appalachian coal miners who found it impossible to retool and use their skills elsewhere, even over a period of several decades--and also to establish mechanisms to facilitate retraining and movement into other occupations requiring less flexibility.

8.3 Essential Inputs. The minimum essential ingredients for producing good social studies curriculum materials are the following.

Good social science and competent social scientists must contribute to the development. It is not satisfactory for educators and writers to merely "plug in" the social science content at appropriate places, as has been assumed by many curriculum developers and publishers. Social scientists should participate in the entire process of developing and testing materials.

Knowledge of human development and learning is essential. The best knowledge of child development and educational psychologists must be used and, ideally, experts in these areas would participate in the development and testing processes.

Knowledge of schools and of students is essential. Educationalists must contribute their expertise or educational theory and classroom practices to the development and testing of social science curriculum materials.

Finally, evaluators are essential to successful development. Their advice should be sought in designing and carrying out testing procedures and ideally they would participate in the testing and assessment of the tests.

8.4 The R and D Cycle. The research and development cycle for testing of many kinds of products is well established, but not for educational products. New curriculum materials should go through the R and D cycle at least twice--research, development, testing, assessment, more research, more development, etc.--even though the research component in many materials development efforts may be modest.

8.5 Publication of Materials. A number of problems make the present methods of publishing and distributing materials unsatisfactory.

8.51 Copyright problems. Large government grants for curriculum materials development have resulted in the production of many creative and effective materials. Government policies with respect to copyrights and royalties have, however, created some problems. One government policy has been to require that all materials produced with federal funds be copyrighted and that if they are published commercially, any resulting royalties be returned to the U,S. Treasury. The policy presents a dilemma for curriculum developers, who feel that they have some personal rights in the materials they have created even though they have used government funds. Another government policy has required that materials produced by a funded project be placed in the public domain. In some cases, developers working under this policy have completed public domain versions, which do not represent their best efforts, and then produced improved versions which were published through

commercial publishers. This procedure is somewhat defensible in view of the fact that materials in the public domain sometimes do not become well known; they are seldom picked up, polished, published, and promoted by commercial firms. The early work of the School Mathematics Study Group went into the public domain and had happy results in that many individual authors used those materials as the basis for producing their own commercially-published materials. Thus, a useful variety of classroom materials became available. No such felicitous results have followed from any of the social studies projects that have gone into the public domain. There has, at best, been one published version from any one project and, in some cases, materials that have gone into the public domain have resulted in no finished, generally available materials. The recently-instituted policy of the Office of Education whereby royalties may be shared between authors and the government seems like a promising way of meeting the conflicting claims of authors and the government.

8.52 The problems of producing varied and multi-media materials has usually been too much for the publishers. Curriculum project materials, originally produced with a great variety of format, media, and equipment, have inevitably had much of their variety and creativity squeezed out in the publishing process. One of the most creative social studies materials projects negotiated unsuccessfully with 42 publishers before finding a small experimental publisher, financed by educators, to undertake the publication. Publishers find bound materials in hard covers to be the easiest kind of product to produce and distribute.

8.53 Publishers as disseminators and trainers have occupied educational roles that they are not qualified to fulfill. Publishers' field men are the link between publishers and users of materials, but they cannot be well

acquainted with the materials in many fields in which their employers publish, nor can they usefully fulfill the role of comparing the various alternatives publications available to purchasers of materials. Publishers and their agents are still less qualified to serve as trainers for using new materials. Yet many of the creative and varied materials coming from curriculum projects seem to require special training by well-qualified persons familiar with them.

There is a great gap between the producers of materials and the users of materials. What is needed is a system or a number of systems that can undertake the tasks of making comparative analyses of available materials, helping the purchasers to understand the new materials and to make selections that best fit their needs, and training teachers or assisting in the training of teachers who will use the new materials.

8.6 Some Materials Development Needs. Most of the curriculum materials developed in the last decade have been based on the assumption that the existing organization of classrooms and of schools will continue and that the existing subject matter areas and divisions will not change very much. We think it is now time for materials development to strike out in two new directions. First, materials should be designed to meet the new kinds of classroom, school, and community configurations which we have discussed above, partly as prediction and partly as hope. Second, curriculum materials should probe some new topics and areas that have heretofore been neglected in the curriculum. Listed below are a few of many possible new and useful topics which should be of interest in the social studies curriculum and, in some cases, all curricula.

Concepts of probability, uncertainty, and approximation should be explored and understood in the very early grades. Our school culture is permeated with compulsions about precision, certainty, and right answers.

These compulsions probably come in part from the unthinking way in which mathematics--at least until the advent of "the new math"--has been taught in the early grades.

Materials could be produced which would help children learn how to use resources of all kinds and particularly resource personnel. The ideas that particular information must come from particular places--usually the teacher--is as rigid and harmful to good learning as is the fixation about right answers.

The basic ideas of cost-benefit analysis have very wide applicability. and could be incorporated in materials for use in the early grades.

The ideas of system analysis have wide applicability also. They can be introduced in simple forms in the early grades and these ideas can be built into much more sophisticated forms later on.

Another very useful and neglected area that should be investigated in the early grades is how people learn and how they work. Students entering upon a twelve- to twenty-year career in learning should know that there are many different ways to organize the many tasks of learning--reading, note-taking, putting ideas together, writing, memorizing, keeping files, culling files, etc. They should learn about the variety of methods and how they can find the methods that best fit their own capabilities and learning styles.

Materials that give guides to the use of local resources and data would help meet the need that schools feel for studying their localities. Open-ended materials can be made which show useful ways of using local census data and survey data, and ways of exploring local industry, public agencies, and other social institutions.

More cheap, disposable materials are needed. Expensive equipment and materials such as those created by the High School Geography Project and some

of the school science projects are sometimes warranted, and schools should become accustomed to spending more for curriculum materials and equipment. But it is also useful to look for ways to make usable but cheap equipment and materials, although low profits and complicated distribution problems discourage publishers from pursuing this goal. American Educational Publishers has provided an admirable exception in publishing at very low cost the booklets developed by the Harvard Project Social Studies.

9.0 Analysis and Evaluation.

9.1 A broad view of evaluation. Evaluation is sometimes very narrowly construed as a precise experimental procedure, sometimes very loosely construed as a horseback judgment. We think it is useful to take a broad view of evaluation which includes many kinds of data and various degrees of precision.

Analysis is often a useful first step toward evaluation. What is the thing or situation being evaluated? What are its parts? How important are they relative to each other? How are the parts related to each other?

Controlled experiments can supply useful data for evaluation. However, these are not the only useful kind of data, as might be inferred from the emphasis placed on controlled experiments by many educational researchers. Observational data of a wide variety gathered without experimental controls can be very useful for evaluation purposes. Educational researchers have not made very much use of uncontrolled observational data, possibly because of a prevailing and erroneous view that such data are less respectable than controlled experimental data. It should be noted that many highly respectable sciences make extensive use of uncontrolled observational data--including economics, sociology, anthropology, biology and astronomy.

Interview data are also an important source of information for evaluation.. In the evaluation of educational endeavors, useful data can be obtained from students, teachers, administrators, parents, and others interested in or involved with the educational processes. We have neglected these sources of data, particularly the students

9.2 Evaluation of What?

9.21 Evaluation of student performance has been the main focus of educational evaluation. Comments have already been made in this paper on

the dysfunctional nature of most student evaluation procedures, which are made for the purposes of comparing sorting and grading students. We must move to forms of student evaluation which focus on the student's progress, in relation to goals appropriate for him, and the factors that can contribute to and detract from that that progress.

9.22 Teacher performance is the next most common focus of evaluation. Among the many methods and instruments that have been designed for observing educational processes, those intended to analyze and evaluate teacher performance are predominant. This emphasis on evaluation of teacher performance is due partly to the fact that the teacher-in-training is the focus for grading purposes and partly to the fact that teacher characteristics are thoughts to be the most important determinants of student achievement. The classroom is the most prominant part of the classroom and seems to be the natural target for analysis and evaluation.

9.23 All the important elements and relationships in learning situations should be studied and evaluated, not just student and teacher performance. The focus should be on the nature and effects of a great variety of learning aids and configurations.

9.24 Since curriculum materials are an important part of the educational configuration, they should be analyzed and evaluated by themselves and in relationship to teachers, students, and various classroom situations.

9.25 Classroom procedures could profitably be classified, analyzed, and evaluated individually, in relationship to each other, and in relationship to students, teachers, and materials.

9.3 Who Should Evaluate?

The duties of evaluation have been performed almost exclusively by teachers who evaluate students and by educational researchers who evaluate

relationships between well-defined variables and well-controlled educational configurations. There is a myth, not widely believed, that administrators evaluate teachers.

In addition to broader views of what evaluation methods can be used and what things or processes should be evaluated, we need a much broader view of who should do the evaluating. Students should be much involved in many kinds of evaluation, including evaluation of their own progress, of teachers, and of many aspects of the school and school system. Teachers should evaluate many kinds of transactions and outcomes in the classroom, not just the progress of individual students. Administrators should be more involved in evaluating equipment, materials, and processes. "outsiders", both lay and professional, should play a part in evaluating alternative methods of providing learning experiences.

9.4 Formative and Summative Evaluation. The terms "formative" and "summative" makes a useful distinction about the purposes of evaluation. Summative evaluation is the making of judgments about a completed act or product. It is often helpful but has been over-used in making final judgments on the worth of students, teachers, and processes. Formative evaluation should be used more than it is for making judgments intended to improve an on-going process. It requires more analysis of elements and of cause and effect and more creativity in extrapolating results to predict what would happen if some of the variables in the educational process were changed.

9.5 Accountability. Current dissatisfaction with education has led to demands for "accountability," which usually means the supplier proves that the desired results have been achieved. In many service industries, including government, medicine, and education, the principal criterion of accomplishment is the amount of resources used up or of money spent to obtain the services. The demand for accountability is a request to measur results directly rather

than assume a relationship between expenditures and results. There are a few common criteria of accomplishment more closely related to results than are educational expenditures. New York State Regents Exams have been used to compare the performances of teachers and schools. Many schools use the number of Merit Scholarships recipients or Ivy League admissions from their student body as measures of successful performance. The weaknesses of these criteria are obvious.

An interesting experiment in accountability is going on in a few school systems that have contracted some specific educational tasks to private firms. The firms are paid on the basis of improvement of student performance, such as, a gain of one year in reading comprehension. The achievement of accountability through this route is probably limited. Much more promising is the prospect of the changes described above, which may yield much greater and more pertinent data on which judgments about educational achievements can be based.

9.6 Acquisition, Processing, and Dissemination of Evaluative Data about Materials, Processes, Experiments, Etc. These activities are almost non-existent. In the interests of efficiency and progress in educational change, much more needs to be done in disseminating results of evaluation.

9.7 Cost-benefit analysis. This can play an important role in evaluation. Evaluation often takes the form of comparing and choosing between two or more alternatives. Cost-benefit analyses of the alternatives can help in the decision-making process .

10.0 Dissemination.

Dissemination is, of course, closely related to the education of personnel. It focuses on the preparation and distribution of information, whereas personnel education focuses on receiving and using the information.

Two general methods of dissemination can be distinguished--the creation of special institutions or models and the use of existing organizations.

10.1 Models. Special information and dissemination agencies can be created to collect and package information for distribution through publications and through other dissemination mechanisms. The central office of the Social Science Education Consortium is this kind of agency.

10.12 In the agricultural extension model, well-informed agents go out to potential users of information and assist them, on their home ground, in assimilating and utilizing the information. A new project at Indiana University is working with a number of schools within a 200-mile radius, using this field-agent concept. The staff and teacher associates of the SSEC also serve this function in their field work.

10.13 Producers and publishers of materials are also disseminators. As has already been indicated, publishers have, in general, performed this function poorly. Some of the materials development projects--notably Education Development Center with "Man: A Course of Study" and the San Francisco State (Taba) project--have undertaken extensive programs of disseminating information about their materials in conjunction with in-depth training in their use. The advantage of this kind of dissemination is that it makes expert information and training available to persons who are planning to use the materials. The chief disadvantage is that it does not give a basis for comparing the one set of materials with other alternatives and selecting from among many possibilities.

10.14 Institutes and workshops for inservice training of educational

personnel have often served the purpose of disseminating new ideas and materials.

10.15 Preservice teacher education is a channel for the dissemination of new ideas and materials to the extent that college methods teachers are well informed and see this as a part of their teaching duties. This dissemination channel could be made much more effective by providing educational opportunities for methods teachers who are not well informed and by providing all methods teachers with better resources for keeping up to date and better information training packages for use in their courses.

10.2 Existing Organizations

10.21 Existing professional organizations form a ready-made channel for new ideas and materials, particularly if they look upon this function as one of their goals. In the social studies, the National Council for the Social Studies (NCSS), the state councils for the social studies, the Council of State Social Studies Specialists, and the organization of city social studies specialists all provide such ready-made channels. The NCSS is a strong and continuing organization which is performing dissemination functions in a variety of ways. The other organizations mentioned are much looser, without professional staff and continuing programs. With additional resources aimed at dissemination of new ideas and materials, these organizations present a potential for additional needed dissemination work.

10.22 Informal groupings of innovators and practitioners form "invisible organizations" that are very important for dissemination. Such groupings are established and sustained through contacts related to professional organizations, projects, publications, institutes, and so forth, but have an existence of their own that depends very much on personalities and individual interests.

11.0 What To Do?

In the foregoing sections we have described, analyzed, deplored, predicted, and prescribed with respect to the state of education in the United States. Throughout most of the paper the focus has been on elementary and secondary education, and, within that sphere, on social studies and social science education. In this section we select and summarize a large number of developmental needs, focusing on materials, the education of educational personnel, and needs with respect to conceptualization, research, and planning.

11.1 Resources for Change. Most of the human and financial resources of our $70 billion education enterprise are devoted to keeping the shop running as is--to daily tasks of teaching, administrating, raising funds, and building buildings. It is a rare school district that allocates one per cent of its budget to planning and implementing innovation and experimentation.

The resources of school districts devoted to innovation are meagerly supplemented by funds of universities and state departments of education. Thus, federal funds for educational innovation, although modest, loom large in the total picture. Federal funds also have the potential advantages of being less restricted to immediate payoffs, of being allocated wherever in the nation seems to offer the best prospects of good results, and of having results nationally disseminated. Funds of private foundations devoted to educational innovation supplement federal funds and have the same potential advantages.

The total funds available for educational innovation, although quite limited, offer the prospect of being strategically used to bring about important changes. The strategy and planning for use of these funds are, of course, critical. How "practical" or how "visionary" should the planners be?

Shall they stay close to what is and what will be, thus increasing the likelihood that their activities will have an effect,although necessarily a small one, or should they think imaginatively about what might be and should be, running the risks that the practical world of reality will ignore them? Innovators who wish to be effective must steer a middle course between extremes of being practical and being visionary. Hopefully, there will always be a number of innovative programs going forward, scattered along the continuum from the practical to the visionary.

11.2 Context for Planning Change. In making the following recommendations, we assume that there will be moderate to large changes in the nature of elementary and secondary schools in the coming decade. The most important changes will be of the following forms.

The physical and functional configurations classrooms and schools will change, such that thirty students facing a front-and-center teachers will be less common. There will be a greater variety of student groupings and tasks, which will both reflect and facilitate new approaches to learning and teaching tasks.

The role of the learner will change and will be characterized more by participation, choices, individualization, autonomy, and mutual aid among students. The nature and roles of educational personnel will change, responding to and facilitating the changes in the school configuration and the role of the learner. Teachers will become more specialized and more versatile, and will be supplemented by educational personnel fulfilling a number of tasks facilitating the work of the teacher.

11.3 Focus on Materials. Many of the desired changes in education are not necessarily or intimately related to curriculum materials. However, many of the changes can be suggested by, facilitated by, and/or embodied

in materials. In this subsection, therefore, we are focusing on materials as embodying and facilitating a number of aspects and prcesses of improved educational processes while clearly recognizing that some of the suggested processes could be carried out without the use of any materials.

11.31 Analysis and evaluation oomponent. Analysis and evaluation, broadly construed, should play a much more functional and important role than they do now. Analysis and evaluation components should be an integral part of materials and should be designed for use by both students and teachers. The design should make them useful for the following purposes:

--diagnosis of where the student is and what he needs

--placement of the student in learning situations appropriate to his state of progress and needs

--diagnosis of learning problems

--progress toward goals that are visible to and understood by the student

11.32 Learning processes guided by the materials will have the following characteristics from the standpoint of the student:

--active participation in the learning process

--variety of learning experiences

--individualized experiences suitable to the particular learner, with the pace of learning largely determined by the learner

--choice of options based both upon the learner's own desires and his knowledge about his own desires, as indicated by the analysis and evaluation process in which he has participated

--autonomy, nutured by all of the foregoing characteristics

11.33 Mutuality in learning among students will be facilitated by:

--small groups of varied size and composition with varied tasks

--knowledge of small group dynamics

--cross-ability helping

--cross-age helping

--group decision making

11.34 Outcomes of learning facilitated by the characteristics in the foregoing subsection will include a learning posture characterized by:

--knowledge about how to learn

--a can-do attitude toward learning

11.35 The intended uses of learning, hopefully complementary rather than competitive, are the achievement of knowledge and skill with respect to:

--Vocation

--Avocation

--Coping

11.36 Content should be oriented both to theory and to the real world, between which there should be no conflict. The real-world orientation should include attention to social problems, which to a large extent can be studied by using the school and the community as sources of data and as laboratories. The particular kinds of content, which must be complementary rather than competitive, are:

--cognitive learning of subject matter based on knowledge of the nature of knowledge and the structure of particular disciplines

--the nature and roles of feelings and attitudes

--the nature and roles of valuing

--methods of evaluation

11.37 Materials should be as useful to the teacher as they are to the student. They should be of interest to him and should facilitate his own learning. The analytical and evaluative components should give feedback useful to both the teacher and the student, with respect to placement,

diagnosis, and measurement of progress. In addition to assisting the student and the teacher in performing their roles, the materials should also be designed to assist other personnel--aides of various kinds, specialists, and other persons fulfilling the differentiated astaffing roles of the future.

11.38 The required inputs and processes for successful development of materials include the following:

--knowledge of the social sciences and the collaboration of social scien'.sts

--knowledge of human development and learning and the collaboration of child development psychologists

--knowledge of schools and students and the collaboration of educationists

--knowledge of evaluation methods and the collaboration of evaluation experts

--use of the research and .development cycle, an essential for assuring sound products

--a more flexible publication process, allowing production of a greater variety of materials and facilitating better decision making and training operations with respect to users of materials

11.4 The Education of Educational Personnel in the Universities. As with the preceding recommendations concerning materials we proceed on the basis of moderately optimistic assumptions about probable and possible changes in schools in the future. Our suggestions about the education of educational personnel relate to preparation of teachers for the schools of the future, rather than the schools of today.

11.41 Knowledge and knowledge posture. With respect to knowledge in general and to social science knowledge in particular, the following knowledge and characteristics are essential:

--Teachers must know the nature of knowledge--how knowledge is acquired and the role of concepts, structure, hypotheses, and theories in learning and knowing.

--The teacher must be open with respect to the tentative and probabilistic nature of all knowledge.

--He must understand the scientific nature of the social sciences, including the ways in which they are similar to and different from the natural sciences.

--The teacher must be informed about the sustance of the social sciences, including their methods of investigation, structures, theories, etc.

--The teacher must be informed about the nature of values, methods of analyzing values, and the relationships of values to science and social science.

11.42 Pedagogical skills. The teacher's classroom skills must be such that he is acquainted with a useful and wide variety of learning strategies. He should know about the uses and misuses of the following:

--many types of classroom questioning

--many types of discussion methods

--many types of small group configurations and interactions

--various methods of individualized learning

The teacher should know about the uses of and methods of analysis and evaluation procedures. In particular, they should know about the following:

--purposes with respect to student placement, diagnosis of learning problems, measurement of progress, feedback to student, feedback to teacher, feedback to others

--administration of analysis and evaluation methods by students, teachers, and others

--the kinds of analysis and evaluation with respect to cognitive learning, feelings, and attitudes, valuing, and evaluation

11.43 Organizational skills. Teachers need skills for coping in the various organizations with which they are associated, and in particular, with the school and the school system. Two general types of skills are needed:

--defensive coping, to provide a minimum amount of freedom for autonomy and experimentation

--active coping, to be able to influence and bring about change in organizations

11.44 Types of university programs. We assume, as before, that the schools of the future will have different roles than at present for the student as a learner and for teachers and other educational personnel; also, that there will be closer interactive relationships between the universities, schools, and community.

University programs should include training at the predoctoral and postdoctoral levels for university personnel, who will fulfill the roles of:

--social science education researcher

--social science curriculum developer

--social science school consultant

Universities should have educational programs for school personnel, which would include integrated social science and education subject matter for:

--teachers at the bachelor's and master's levels

--resource personnel at the M.A. and Ph.D. levels

--paraprofessionals, for whom a great variety of short courses would be offered

11.45 Program designs. Resources are needed for the design of programs, as outlined in the preceding subsection, taking account of the needs of school personnel as described in the other preceding subsections.

There should be a number of pilot university centers to test and redesign the various recommended training programs.

There should be a communication network between pilot university centers, and including others testing similar programs, which would accumulate, analyze and disseminate information about the implementation, testing, and redesign of these programs.

11.5 Education of Educational Personnel in School Systems. School systems can and probably will participate in teacher education more extensively in the future, both at the preservice and inservice levels. The following patterns need to be designed or redesigned, tested, and implemented:

--School systems can participate in preservice education by contributing expertise and personnel to the university classrooms in which most preservice education is now accomplished.

--They can play a more extensive and active role in the student teaching, which hopefully will become a much expanded and more varied part of preservice education.

--It is possible that some school systems will assume administrative responsibility for preservice education and some experiments with varying degrees of shared responsibility between school systems and universities might prove useful.

Schools and school systems need much better resource centers composed of a wide variety of new materials as well as the staple resource books, periodicals, and equipment. The resource centers need able staff members who can make the centers an instrument of continuing individualized teacher learning about new ideas, new methods, and new materials.

The varied resource personnel of the schools of the future can receive much of their training on the job in schools. These include resource teachers, subject matter specialists, community resource personnel, and university resource personnel.

Procedures and leadership for training school personnel in the use of resources--including material, personnel, and community resources--are needed.

Systematic classroom testing of new ideas and new materials within school systems is needed.

There should be a well organized system for reporting, analyzing, and disseminating information about the testing of new ideas and new materials within and between school systems.

11.6 Education of Educational Personnel in the Community. Uses of the community as a part of organized education have been very minor in the past. There is not much experience to date indicating that it can be done successfully. Some promising exploratory and developmental activities are the following:

--an inventory of possible learning sites and experiences

--an inventory of community resource persons

--involving teachers in planning for and training in the use of community resources

--trials of community learning experiences

--reporting, analyzing, and disseminating results of ttials of community learning experiences

11.7 Conceptualization and Planning Needs. The four preceding subsections have dealt with possible programs and operations with respect to the development of materials and the education of educational personnel. All of these recommendations include components of testing, analysis, and

evaluation. For all of these programs, as well as for some activities not specifically mentioned there, some prior work at the conceptualizing and planning levels is essential. The following topics or subject areas are suggested for planning and developmetal work by work groups, conferences, commissioned papers, and other means.

11.71 Social science as subject matter. Much work has already been done on the following topics. In each case, the previous work should be reviewed and assessed with respect to additional needs or interpretations required for elementary and secondary social science curricula and with respect to the education of teachers.

--the nature and structure of individual social sciences

--relations between and methods of integrating the individual social sciences

--the role of values in science and social science

--the relationship of the frontiers of knowledge to the education of teachers and of elementary and secondary students, including ways of knowing and ways of knowing about the future

11.72 The study of schools by social scientists. To a very limited extent, social scientists have applied their knowledge and skills in extending our understanding of schools and school systems and how they work. Much more can be done in applying the expertise of social scientists to this work, particularly including contributions by:

--sociology

--social psychology

--anthropology

--political science

--economics

11.73 Materials development. Materials development of various kinds could proceed on the basis of suggestions in preceding parts of this paper. However, it might be useful to have one or more work groups assess and reorganize these plans with a view to suggesting a master plan or plans, including priorities, along with the various suggestions for processes and subject matter to be included in the materials. There might be added materials for study by teachers and by students, gained from the work suggested in the preceding subsection concerning the nature of schools and education as seen by social scientists.

11.74 Analysis and Evaluation. The analysis and evaluation ideas and suggestions in section 9.0 above could provide a useful focus for some form of work group or groups which would organize and supplement these ideas with a view to presenting ways of implementing them.

11.75 Dissemination. Dissemination methods would also form a useful focus for one or more work groups or other types of think groups which would extend the descriptions and models of section 10.0 above and work out some specific dissemination procedures for innovative educational ideas.

SELECTED REFERENCES AND BIBLIOGRAPHY

The following citations, prepared with the help of John Haas and Karen Wiley, suggest some good sources of further information on a number of the matters covered in the preceding text. The references are given in two ways: (1) keyed to the numbered sections of the text, and (2) alphabetically by author. They are by no means exhaustive, either with respect to covering each of the numbered sections or to covering all of the important references for any given section.

Selected References Keyed to Outline

1.0 Introduction

2.0 Stability and Change

Two excellent general works dealing with predictions of the future are:

Kenneth Boulding, The Meaning of the Twentieth Century: The Great Transition (New York: Harper and Row, 1964).

"Toward the Year 2000: Work in Progress," Daedalus (Summer 1967).

Two volumes developed by the Eight-State Project, "Designing Education for the Future," deal directly with projections about education in the future. They are:

Prospective Changes in Society by 1980: Including Some Implications for Education (Denver, Colo.: The Eight-State Project, 1966).

Implications for Education of Prospective Changes in Society (Denver, Colo.: The Eight-State Project, 1967).

2.1 Stable Forces

Most of the serious critics of the American educational system today focus their attention on reform rather than eradication of the system. John Fisher indicated aptly the stability of our public education system when he wrote: Any notion that the American people would consent, at the local level or on a broader scale, to liquidating the public school system is not what one could confidently call a betting proposition. ("Who Needs Schools?" Saturday Review, Sept. 19, 1970, p. 90.)

2.2 Forces for Change

2.21 Social dissatisfaction and unrest

Chapter 2 of Crisis in the Classroom by Charles E. Silberman (New York: Random House, 1970) discusses some of the major sources of dissatisfaction with the schools as well as recent successes in American education. Throughout this paper, heavy reliance was placed on this volume--a landmark in the appraisal of American education, especially in his analysis of the past twenty years.

There is abundant literature of recent vintage dealing with the alienation of youth in American society and schools. Among the better-known discussions of this problem are:

Paul Goodman, Growing Up Absurd (New York: Random House, 1956).

Herbert Kohl, 36 Children (New York: The New American Library, Inc., 1967).

Jonathan Kozol, Death at an Early Age (Boston: Houghton Mifflin Co., 1967).

Edgar Z. Friedenberg, Coming of Age in America (New York: Random House, 1963).

George B. Leonard, Education and Ecstasy (New York: Delacorte Press, 1968).

Edgar Z. Friedenberg, The Dignity of Youth and Other Atavisms (Boston: Beacon Press, 1965).

John Holt, How Children Fail (New York: Pitman Publishing Corp., 1964).

Erik H. Erikson, ed., The Challenge of Youth (Garden City, New York: Doubleday Anchor Books, 1963).

Joseph J. Schwab, College Curriculum and Student Protest (Chicago: University of Chicago Press, 1969).

Kenneth Keniston, The Uncommitted, Alienated Youth in American Society (New York: Delta Publishing Co., 1965).

Theodore Roszak, The Making of a Counter Culture (Garden City, New York: Doubleday Anchor Books, 1969).

The literature on minorities and education is well known and much too extensive to cite in detail here. Chapter 3 of Charles E. Silberman's Crisis in the Classroom (New York: Random House, 1970) gives a good review of the problems and effects of ethnic discrimination as it relates to the schools and mentions major references in the area. One other important source is Teachers for the Real World edited by B. O. Smith (Washington, E.C.: AACTE, 1969).

The record of the 1969 Hearings before the House Subcommittee on Education reflects the general public discontent with the schools and the public resistance to spending more money on education.

2.22 Changes in occupational patterns

Information about the shifts in occupational patterns and how best to prepare students for their future occupational roles may be found in:

Richard I. Miller, Education in Changing Society (Washington, D.C.: Project on the Instructional Program of the Public Schools, NEA, 1963).

Peter F. Drucker, The Age of Discontinuity (New York: Harper and Row, 1969).

Leon H. Keyserling, "Achieving Nationwide Educational Excellence, A Ten-Year Plan to Save the Schools," based on a study initiated by the American Federation of Teachers (AFL-CIO), (Conference on Economic Progress, 1968); in 1969 Hearings before the House Subcommittee on Education, Part I, pp. 243-335.

2.23 Decreasing population growth rate

Keyserling, in the report mentioned in 2.22 discusses the effects of decreasing population gorwth on the schools of the nation.

2.25 Foundation and government grants

There is, of course, a wealth of information on government funding of educational innovation to be found in the records of Congressional committee hearings. Of particular interest is the testimony of Dr. James J. Gallagher before the House Subcommittee on Education during the 1969 Hearings. His testimony, and that of the several project directors who accompanied him, contain many enlightening thoughts on the nature of government funding for educational innovation, and the research and development cycle.

2.3 Probable Changes

2.32 In physical sturcture of schools

See the annual reports of the Educational Facilities Laboratory, Inc., e.g., Innovative Schools: 1968.

2.33 In the curriculum

Robert J. Schaefer, The School as a Center of Inquiry (New York: Harper and Row, 1967).

2.34 In public school monopoly of public support

One of the strongest indications of the growing cracks in the dominance of publicly-run schools is the recent discussion of the "voucher system." This idea appeared several times in the 1969 Hearings of the House Subcommittee on Education. John H. Fisher, in his Saturday Review (Sept. 19, 1970) article "Who Needs Schools?" devoted attention to the voucher system and other models for replacing, eliminating, or bypassing public schools.

3.0 Educational Change and the Pedagogical Pendulum

3.1 Change

Some of the major sources pertaining to educational change are described in Major Works on Change in Education: An Annotated Bibliography with Author and Subject Indices, compiled by Ronald G. Havelock, Janet C. Huber, and Shaindel Zimmerman under the auspices of the Center for Research on

Utilization of Scientific Knowledge, Institute for Social Research, The University of Michigan, 1969. One of these is: W. T. Martin and Dan C. Pinck, Curriculum Improvement and Education, (Cambridge, Mass.: Robert Bentley, Inc., 1966).

One very recent work not listed in the above bibliography is Marcella R. Lawler, ed., Strategies for Planned Curricular Innovation (New York: Teachers College Press, 1970).

Two particularly outstanding studies of educational change processes, both listed in the above bibliography but worthy of special mention, have been published by the Center for the Advanced Study of Educational Administration (CASEA) at Eugene, Oregon:

Richard O. Carlson, Adoption of Educational Innovations (1965).

Richard O. Carlson, et al, Change Processes in the Public Schools (1965).

Jacob W. Getzels and Egon G. Guba, "Social Behavior and the Administrative Process," School Review, Vol. 65 (Winter 1957), pp. 423-441.

3.2 Sources of Resistance to Change

In discussing the possibility of following the English "informal school" model in the U.S., Silberman devotes some discussion to the cultural and institutional differences between the two countries which might hinder U.S. adaptation of the English pattern. Charles E. Silberman, Crisis in the Classroom (New York: Random House, 1970, pp. 273-284; 319-322).

3.22 In colleges and universities

Charles E. Silberman, in Crisis in the Classroom (New York: Random House, 1970) devotes one section "The Education of Educators," to a discussion of many of the problems of changing higher education.

Among the important works in the area of changing higher education are:

Peter Drucker, The Age of Discontinuity (New York: Harper and Row, 1969).

Calvin G. T. Lee, ed., Improving College Teaching (Washington, D.C.: American Council of Education, 1967).

Daniel Bell, The Reforming of General Education (New York: Columbia University Press, 1966).

Christopher Jencks and David Riesman, The Academic Revolution (New York: Doubleday, 1968).

3.3 Strategies for Change

3.34 Affecting major sources of influence

The two volumes previously cited in 3.1 written by researchers at the Center for Advanced Study in Educational Administration at Eugene, Oregon (CASEA) are also relevant here.

3.35 Examples

Again, the volumes from CASEA mentioned in 3.1 describe models and examples of strategies for change.

Silberman seems to operate on the assumption that successful exemplars can do much to stimulate change by creating a hopeful atmosphere in place of the apparently widespread sense of defeatism where educational change is concerned.

See also:

Anthony G. Oettinger, Run, Computer, Run (Cambridge, Mass.: Harvard University Press, 1969).

H. Thomas James, The Schools and the Challenge of Innovation (New York: Committee for Economic Development, Supplementary Paper No. 28, 1969).

3.4 The Pedagogical Pendulum

Among the sources which can add insight and historical perspective to the current polarities in educational debate are the following:

Lawrence A. Cremin, The Transformation of the School (New York: Alfred A. Knopf, 1961).

Michael B. Katz, The Irony of Early School Reform (Cambridge, Mass: Harvard University Press, 1968).

Lawrence A. Cremin, The Genius of American Education (New York: Vintage Books, 1966).

C. Winfield Scott, Clyde M. Hill and Hobert W. Burns, The Great Debate: Our Schools in Crises (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1959).

Ronald Gross and Judith Murphy, The Revolution in the Schools (New York, Harcourt, Brace and World, Inc., 1964).

A number of the ideas under this heading were discussed in some detail at the June 1970 SSEC Annual Invitational Conference. A volume based on this conference is to be published at a future date, as yet undetermined.

3.42 Professional and vocational education vs. citizenship education

Some of the current arguments in favor of "citizenship education" are presented

in "Civic Education in the Reform Era: A Position Paper for the Seventies," a paper given by John P. DeCecco at the June 1970 SSEC Annual Invitational Conference.

3.46 Cognitive vs. affective

Richard M. Jones, Fantasy and Feeling in Education (New York: New York University Press, 1968).

Paul Goodman, Growing Up Absurd (New York: Random House, 1956).

Herbert Kohl, 36 Children (New York: The New American Library, Inc., 1967).

Jonathan Kozol, Death at an Early Age (Boston: Houghton Mifflin Co., 1967).

Edgar Z. Friedenberg, The Dignity of Youth and Other Atavisms (Boston: Beacon Press, 1965).

John Holt, How Children Fail (New York: Pitman Publishing Corp., 1964).

Erik H. Erikson, ed., The Challenge of Youth (Garden City, New York: Doubleday Anchor Books. 1963).

Joseph J. Schwab, College Curriculum and Student Protest (Chicago: University of Chicago Press, 1969).

Kenneth Keniston, The Uncommitted, Alienated Youth in American Society (New York: Delta Publishing Co., 1965).

Geoffrey Howson, ed., Children at School, Primary Education in Britain Today, (New York: Teachers College Press, Teachers College, Columbia University, 1970).

3.47 "Schooling" vs. education in the total community

Pages 349-356 in Crisis in the Classroom by Charles E. Silberman (New York: Random House, 1970) describes in detail the Parkway School experiment in Philadelphia, which is based on the idea that education should draw on and take place in the wider community.

See also:

The Parkway Program (School District of Philadelphia, May 1969).

3.48 Curriculum materials vs. teacher education

See Charles E. Silberman, Crisis in the Classroom (New York: Random House, 1970) pp. 158-203.

3.5 Goals in Conflict

4.0 Problems and Changes in Roles and Functions

Charles E. Silberman, Crisis in the Classroom (New York: Random House, 1970) makes observations and suggestions about changes in roles and functions of most of the elements discussed in 4.0.

See also:

Robert J. Schaefer, The School as a Center of Inquiry (New York: Harper and Row, 1967).

4.1 Learner

4.11 Learning role changes

Jerome Bruner, ed., Learning About Learning: A Conference Report (U.S.O.E., Cooperative Research Monograph No. 15).

Carl R. Rogers, Freedom to Learn, (Columbus, Ohio: Charles E. Merrill Publishing Co., 1969).

4.12 Diagnosis

Pages 23-93 of Part I of the 1969 Hearings before the House Subcommittee on Education contains extensive information on Individually Prescribed Instruction, a project funded by the U.S. Office of Education and concerned with developing flexible programs in which students are diagnosed and placed within a sequential course of study according to abilities and needs.

4.13 Placement and sequence

See 4.12.

4.14 Variety of resources and activities

The Parkway Program (School District of Philadelphia, May 1969).

4.2 Teacher

4.21 Teaching role changes

Jerome Bruner, ed., Learning About Learning: A Conference Report (U.S.O.E., Cooperative Research Monograph No. 15).

Association for Supervision and Curriculum Development, Criteria for Theories of Instruction, (Washington, D.C.: NEA, 1968).

Lawrence Siegel, ed., Instruction: Some Contemporary Viewpoints, (San Francisco: Chandler Publishing Co. 1967).

William D. Romey, Inquiry Techniques for Teaching Science, (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1968).

4.22 Differentiated staffing

Leon H. Keyserling, "Achieving Nationwide Educational Excellence, A Ten-Year Plan to Save the Schools" and accompanying debate and testimony in the 1969 Hearings of the House Subcommittee of Education, Part I, pp. 220-384.

Dwight W. Allen, "A Differentiated Staff: Putting Teacher Talent to Work," The Teacher and His Staff (Washington, D.C.: National Commission on Teacher Education and Professional Standards, December 1967).

J. L. Olivero and Edward Buffie, New Careers in Teaching: The Temple City Story (Temple City, Calif.: Temple City Unified School District, 1969).

"Differentiated Staffing," (Roselle, Ill.: Lake Park High School, 1970), mimeo.

Robert H. Anderson, Teaching in a World of Change (New York: Harcourt, Brace and World, Inc., 1966).

4.24 Inservice education

Walter H. Crockett, James D. Laird, and Joseph C. Bentley, Teachers as Students: Report on the Experienced Teacher Fellowship Program, 1967-68 (Washington, D.C.: CONPASS, 1968).

Report of the Exploratory Conference on Implementation of Science Curriculum Improvement in Elementary Schools held January 13-14, 1967 (Washington, D.C.: National Science Foundation, 1967), mimeo.

4.3 Materials

Merle M. Knight, "An Annotated List of New Social Studies Projects" (Boulder, Colo.: Social Science Education Consortium, Inc., 1970).

Part I of the 1969 Hearings before the House Subcommittee on Education contains information on some materials development projects funded by the U.S. Office of Education.

Alvin C. Eurich, Reforming American Education (New York: Harper and Row, 1969).

H. Thomas James, The Schools and the Challenge of Innovation, Supp. Paper No. 28, (New York: Committee for Economic Development, 1969).

Norris M. Sanders and Marlin L. Tanck, "A Critical Appraisal of Twenty-six National Social Studies Projects," Social Education, Vol. 34, No. 4 (April 1970), pp. 383-449.

4.32 Knowledge, content, and structure

Irving Morrissett, ed., Concepts and Structure in the New Social Science Curricula (New York: Holt, Rinehart, and Winston, Inc., 1967).

4.4 School

Leslie A. Hart, The Classroom Disaster (New York: Teachers College Press, Teachers College, Columbia University, 1969).

Robert N. Bush and Dwight W. Allen, A New Design for High School Education Assuming a Flexible Schedule (New York: McGraw Hill Book Co., 1964).

J. Lloyd Trump and Dorsey Baynham, Focus on Change--Guide to Better Schools, (Chicago, Ill.: Rand McNally & Co., 1961).

4.43 Differentiated personnel

See 4.22

4.45 Ungraded continuous progress

The three classics on nongradedness are:

Richard I. Miller, The Nongraded School (New York: Harper & Row, 1967).

R. Frank Brown, The Nongraded High School (New York: Prentice-Hall, Inc., 1963).

John I. Goodlad and Robert H. Anderson, The Nongraded Elementary School (New York: Harcourt, Brace & World, 1963).

Also, see Robert H. Anderson, Teaching in a World of Change (New York: Harcourt, Brace & World, Inc., 1966).

4.5 Community

B.O. Smith, Teachers for the Real World (Washington, D.C.: AACTE, 1969).

Fred M. Newmann and Donald W. Oliver, "Education and Community," Harvard Educational Review, Vol. 37, No. 1 (Winter 1967), pp. 61-106.

Lloyd Michael, " Community Involvement in Education," The Ideal School, Gloria Kinney, ed. (Wilmette, Ill.: The Kagg Press, 1969).

4.51 As Educational site

Two descriptions of the Parkway School of Philadelphia are (1) pp. 349-356 of Crisis in the Classroom by Charles E. Silberman, (New York: Random House, 1970), and (2) The Parkway Program (School District of Philadelphia, May 1969).

4.6 University

Pages 373-522 of Charles E. Silberman, Crisis in the Classroom (New York: Random House, 1970) give numerous suggestions of ways to improve the university's role in training of teachers.

Harold Taylor, The World and the American Teacher (Washington, D.C.: AACTE, 1968).

Wayne C. Booth, ed., The Knowledge Most Worth Having (Chicago: University of Chicago Press, 1967).

Joseph J. Schwab, College Curriculum and Student Protest (Chicago: University of Chicago Press, 1969).

Daniel Bell, The Reforming of General Education (New York: Columbia University Press, 1966).

William Arrowsmith, "The Future of Teaching," in Calvin B. T. Lee, ed., Improving College Teaching (Washington, D.C.: American Council on Education, 1967).

C. Jencks and D. Riesman, The Academic Revolution (New York: Doubleday, 1968).

4.63 Consulting and other services

Pages 23-26 of Knowledge into Action: Improving the Nation's Use of the Social Sciences, Report of the Special Commission on the Social Sciences of the National Science Board (Washington, D.C.: National Science Foundation, 1969) give a number of suggestions on how social scientists might contribute to better understanding and operation of the schools.

4.7 Government

4.73 State departments of education

Leroy Psencik, H. Mike Hartoonian, and Sheldon Brown, eds., "The Status of the CS^4, Roles and Directory," (Madison, Wisc.: Council of State Social Studies Specialists, 1970).

4.74 Federal Government

Merle M. Knight, "An Annotated List of New Social Studies Projects," (Boulder, Colorado: Social Science Education Consortium, 1970).

Norris M. Sanders and Marlin L. Tanck, "A Critical Appraisal of Twenty-Six National Social Studies Projects," Social Education, Vol. 34, No. 4 (April 1970), pp. 383-449.

A number of ideas pertaining to the role of the Federal government in education were discussed at some length during the June 1970 SSEC Annual Invitational Conference in Discussion Group #6, concerned with "Lessons from the Past." A volume based on this conference is to be published at a future date, as yet undetermined.

4.75 Public support of Private Schools

1969 Hearings of the House Subcommittee on Education.

John H. Fisher, "Who Needs Schools?" Saturday Review (September 19, 1970), pp. 78-79 and 90-91).

5.0 Social Science and Education

Special Commission on the Social Sciences of the National Science Board, Knowledge into Action: Improving the Nation's Use of the Social Sciences (Washington, D.C.: National Science Foundation, 1969).

5.1 Role of the Academic Disciplines

G.W. Ford and L. Pugno, eds., The Structure of Knowledge and the Curriculum (Chicago; Rand McNally, 1964).

Abraham Kaplan, The Conduct of Inquiry (San Francisco: Chandler Publishing Co., 1964).

Irving Morrissett, ed., Concepts and Structure of the New Social Science Curricula (New York: Holt, Rinehart, and Winston, Inc., 1967).

Ernest Nagel, The Structure of Science (New York: Harcourt, Brace and World, Inc., 1961).

Philip Phenix, Realms of Meaning (New York: McGraw Hill Book Co., 1964).

Israel Scheffler, The Conditions of Knowledge (Chicago: Scott Foresman Co., 1965).

5.11 The nature of knowledge

The Encyclopedia of the Social Sciences (New York: Collier & Macmillan, Inc., 1968) is an essential source in this area.

Alfred Kuhn, The Study of Society: A Unified Approach (New York: The Dorsey Press, Inc., 1963).

Charles A. Beard, A Charter for the Social Sciences (American Historical Association, New York: Scribners, 1932).

Bernard Berelson, ed., The Social Studies and the Social Sciences (New York: Harcourt, Brace, and World, Inc., 1962).

Stuart Chase, The Proper Study of Mankind (New York: Harper, 1956).

Ernst Nagel, The Structure of Science (New York: Harcourt, Brace and World, Inc., 1961).

Israel Scheffler, The Conditions of Knowledge (Chicago: Scott Foresman, 1965).

Philip Phenix, Realms of Meaning (New York: McGraw-Hill, 1964).

5.12 Academic disciplines

Daniel Bell, The Reforming of General Education (New York: Columbia University Press, 1966).

Charles E. Silberman, Crisis in the Classroom (New York: Random House, 1970).

5.13 The social science disciplines in elementary and secondary schools

James P. Shaver, "Social Studies: The Need for Redefinition," Social Education, Vol. 31, No. 7 (November 1967), pp. 588-592; 596.

5.2 Definition of Social Science

Alfred Kuhn, The Study of Society: A Unified Approach (Homewood, Ill: Richard D. Irwin, Inc., and The Dorsey Press, Inc., 1963).

Fred N. Kerlinger, Foundations of Behavioral Research (New York: Holt, Rinehart and Winston, Inc., 1964).

5.3 The Social Sciences

Bernard Berelson, ed., The Social Studies and the Social Sciences (New York: Harcourt, Brace and World, Inc., 1962).

Stuart Chase, The Proper Study of Mankind (New York: Harper, 1956).

5.32 New social science areas

Michael Scriven, ed., Values in the Social Studies: Analysis and Teaching, based on the April 1969 SSEC Annaul Invitational Conference, publication forthcoming.

5.4 Social Sciences as Subject Matter

Irving Morrissett, ed., Concepts and Structure in the New Social Science Curricula (New York: Holt, Rinehart and Winston, Inc., 1967).

Irving Morrissett and W. Williams Stevens, Jr., eds., Social Science in the Schools: A Search for Rationale (New York: Holt, Rinehart and Winston, Inc., forthcoming).

Edwin Fenton, The New Social Studies (New York: Holt, Rinehart and Winston, Inc., 1967).

Edwin Fenton, Teaching The New Social Studies in Secondary Schools, An Inductive Approach (New York: Holt, Rinehart and Winston, Inc., 1966).

5.43 Values

Micahel Scriven, Value Claims in the Social Sciences (Boulder, Colo.: Social Science Education Consortium, Inc., 1966).

Michael Scriven, Student Values as Educational Objectives (Boulder, Colo.: Social Science Education Consortium, Inc., 1966).

Michael Scriven, ed., Values in the Social Studies: Analysis and Teaching, based on the April 1969 SSEC Annual Invitational Conference, publication forthcoming.

5.5 Education as a Social Science

Marc Belth, Education as a Discipline (Boston: Allyn & Bacon, 1965).

H. Gordon Hullfish and Philip G. Smith, Relective Thinking: The Method of Education (New York: Dodd, Mead & Co., 1965).

5.6 Schools as the Subject of Social Scientist's Study

5.7 The Schools as a Subject of Social Science Study by Students

5.8 Needed Exploration of Social Sciences for Educational Purposes

5.81 The nature and structure of individual social sciences

Irving Morrissett, ed., Concepts and Structure in the New Social Science Curricula (New York: Holt, Rinehart and Winston, Inc., 1967).

The SSEC has published a series of papers dealing with the structures of five of the social sciences:

Robert Perrucci, Sociology (1966).

Peter Greco, The Structure of Geography (1966).

David Collier, The Political System (1966).

David Easton, A Systems Approach to Political Life (1966).

Lawrence Senesh, Economics (1966).

Paul Bohannan, Anthropology (1966).

5.82 Interdisciplinary approaches to the social sciences

Kenneth Boulding, Alfred Kuhn, and Lawrence Senesh, "System Analysis and its Use in the Classroom," SSEC, umpublished papers, 1970.

Stanley A. Cain, "Can Ecology Provide the Basis for Synthesis Among the Social Sciences?" Social Sciences and the Environment, Morris E. Garnsey and James R. Hibbs, eds. (Boulder, Colo.: University of Colorado Press, 1967, pp. 25-52).

5.9 Relating the Frontiers of Social Science to Social Science Education

6.0 The Learner

All of the titles mentioned under 4.1 and its subheadings are relevant to this section of the paper. In addition, the following works make important contirbutions to this area:

Pages 373-522 of Charles E. Silberman, Crisis in the Classroom (New York: Random House, 1970) give numerous suggestions of ways to improve the university's role in training of teachers.

Robert J. Schaefer, The School as a Center of Inquiry (New York: Harper and Row, 1967).

Alfred G. Smith, ed., Communication and Culture (New York: Holt, Rinehart and Winston, Inc., 1966).

Warren G. Bennis, Kenneth D. Benne and Robert Chin, The Planning of Change (New York: Holt, Rinehart and Winston, Inc., 1961).

Discussion Group #2, "Student Involvement," of the SSEC June 1970 Annual Invitational Conference dealt with a number of items under this heading. A volume based on this conference is to be published at a future date, as yet undetermined.

6.1 Alienation

6.2 Making Tasks Do-Able

Caleb Gattegno, What We Owe Children, The Subordination of Teaching to Learning (New York: Outerbridge & Dienstfrey, 1970).

6.23 Individuliaation

1969 Hearings of the House Subcommittee on Education, Part I, pp. 23-93, contains information on the Individually Prescribed Instruction project.

6.3 Learning Autonomy

6.4 Exercising Autonomy

6.5 Mutuality

6.54 Cross-age helping

Ronald Lippitt, "The Neglected Learner," SSEC Newsletter No. 8 (Feb. 1970).

6.6 Perceived Useful Goals

Michael Scriven, "Education for Survival," The Ideal School (Wilmette, Ill.: The Kagg Press, 1969).

7.0 The Education of Educational Personnel

All of the titles mentioned under 4.1 and its subheadings are relevent to this section of the paper. In addition, the following works make important contributions to the area:

Pages 373-522 of Charles E. Silberman, Crisis in the Classroom (New York: Random House, 1970) give numerous suggestions of ways to improve the university's role in training of teachers.

Alfred G. Smith, ed., Communication and Culture (New York: Holt, Rinehart and Winston, Inc., 1966).

Warren G. Bennis, Kenneth D. Benne, and Robert Chin, The Planning of Change (New York: Holt, Rinehart and Winston, Inc., 1961).

Dwight Allen, "Teacher Education--Academic and Continuing," The Ideal School Gloria Kinney, ed., (Wilmette, Ill.: The Kagg Press, 1969).

The education of educational personnel was discussed at some length throughout the June 1970 SSEC Annual Invitational Conference. A volume based on this conference is to be published at a future date, as yet undetermined.

Irving Morrissett, "The Role of Academicians in the Education of Teachers," a paper prepared for the first annual Report of the U.S. Commissioner of Education on the state of the educational professions at the request of the U.S. Office of Education and which appeared as the first half of Chapter 6 in The Education Professions, A Report to the People Who Serve Our Schools and Colleges--1968 (Washington,D.C.: U.S. Department of Health, Education and Welfare, Office of Education, 1969).

7.1 Required Knowledge and Skills

7.11 Openness

O.J. Harvey has done extensive work on rigidity and authoritarianism of teachers. Among his more recent publications in the area is "Teachers' Beliefs, Classroom Atmosphere and Student Behavior: A Replication and Refinement," co-authored with Carolie J. Coates and B. Jack White, and presented at the 1970 Annual Meeting of the American Educational Research Association.

7.12 Pedagogical skills

Norris M. Sanders, Classroom Questions, What Kinds? (New York: Harper and Row, 1966).

7.2 The Education of Educational Personnel in the Universities

7.3 The Education of Educational Personnel in the School Systems

7.4 The Education of Educational Personnel in the Community

7.5 Overcoming Institutional and Community Rigidities

8.0 Curriculum Materials Development

All of the items mentioned under 4.3 and its subheadings are relevant to this section.

In addition, Charles E. Silberman, Crisis in the Classroom (New York: Random House, 1970), puts forth criticisms of the curriculum materials development movement, on pages 168-186).

8.1 Meeting Student Needs

8.12 Appropriateness of goals

Harry S. Broudy, ed., "A Philosophy of the Ideal School," The Ideal School, (Wilmette, Ill.: The Kagg Press, 1969). In this essay, Broudy speaks of "cognitive and evaluative maps" and the duties of education in terms of these two kinds of maps.

8.2 Meeting Teacher's Needs

8.4 The R and D Cycle

The testimony of Dr. James Gallagher and several project directors accompanying him during the 1969 Hearings of the House Subcommittee on Education contains a good explanation of the R and D cycle (which Gallagher extends to include not only research and development but also demonstration and dissemination) as well as exemplars of how it has been applied in curriculum development.

Walter R. Borg, in "Research-Based Development--A Strategy for Educational Change in the Seventies," a paper presented at the June 1970 SSEC Annual Invitational Conference, puts forth some strong arguments for use of the R and D cycle in developing curriculum materials.

8.5 Publication Materials

Minutes of the Kettering-SSEC Conference on Curriculum Materials Publication and Dissemination (June 1970), unpublished, mimeo.

8.52 The problems of producing varied and multi-media materials

The project which negotiated with 42 publishers was Man: A Course of Study developed by the Education Development Center.

8.6 Some Materials Development Needs

9.0 Analysis and Evaluation

D.T. Campbell and J.C. Stanley, "Experimental and Quasi Experimental Designs for Research in Teaching," in N.L. Gage, ed., Handbook of Research in Teaching (Chicago: Rand McNally, 1963), pp. 171-246, is considered a classic in the field of educational research and evaluation.

The most recent outstanding work in this area is R.W. Tyler, ed., Educational Evaluation: New Rules, New Means, NSSE Yearbook (Chicago: University of Chicago Press, 1969).

J. Thomas Hastings,"Evaluation in the Ideal School," The Ideal School, Gloria Kinney, ed., (Wilmette, Ill.: The Kagg Press, 1969).

9.1 A Broad View of Evaluation

9.2 Evaluation of What?

9.24 Curriculum Materials

Irving Morrissett and W. Williams Stevens, Jr., "Curriculum Analysis," Social Education, Vol. XXXI, No. 6 (October 1967), pp. 483-87.

W.Williams Stevens, Jr. and Irving Morrissett, "A System for Analyzing Social Science Curricula," The EPIE Forum, Vol. I, No. 4 (December 1967) and Vol. I, No. 5 (January 1968).

Merle M. Knight and James O. Hodges, "Curriculum Materials Analysis System: A Summary of Experience," SSEC Newsletter No. 7 (May 1969).

Irving Morrissett and W. Williams Stevens, Jr., "Steps in Curriculum Analysis Outline," (Boulder, Colo.: Social Science Education Consortium, Inc., 1967).

Merle M. Knight, An Annotated Bibliography of Curriculum Materials Analysis (Boulder, Colo.: Social Science Education Consortium, Inc., 1969).

9.3 Who Should Evaluate?

9.4 Formative and Summative Evaluation

9.5 Accountability

Melvin R. Levin and Alan Shank, eds., Educational Investment in an Urban Society, Costs, Benefits, and Public Policy (New York: Teachers College Press, Teachers College, Columbia University, 1970).

9.6 Acquisition, Processing, and Dissemination of Evaluative Data about Materials, Processes, Experiments, etc.

9.7 Cost-benefit Analysis

Melvin R. Levin and Alan Shank, eds., Educational Investment in an Urban Society, Costs, Benefits, and Public Policy (New York: Teachers College Press, Teachers College, Columbia University, 1970).

10.0 Dissemination

Minutes of the Kettering-SSEC Conference on Curriculum Materials Publication and Dissemination (June 1970), unpublished, mimeo.

The sources pertaining to educational change listed under 3.1 contain information relevent to this topic.

10.1 Models

Jacob W. Getzels and Egon G. Guba, "Social Behavior and the Administrative Process," School Review, Vol. 65 (Winter 1957), pp. 423-441.

10.12 Agricultural extension model

The role of change agents in education is discussed in Planned Change, A Comparative Study of Principles and Techniques by Ronald Lippitt, Jeanne Watson, and Bruce Westley (New York: Harcourt, Brace and World, Inc., 1958).

10.2 Existing Organizations

10.22 Informal Groupings

This topic was discussed at length by the Discussion Group #4, on dissemination, at the SSEC Annual Invitational Confernece, June 1970, unpublished.

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